PROCEEDINGS

OF THE

MADRAS GOVERNMENT

IN THE

PUBLIC WORKS DEPARTMENT,

IRRIGATION BRANCH,

FOR THE

MONTH OF DECEMBER 1890.

Printed by Authority.

MADRAS:
PRINTED BY THE SUPERINTENDENT, GOVERNMENT PRESS.
1890.

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GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

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PUBLIC WORKS DEPARTMENT,

IRRIGATION BRANCH.

PROCEEDINGS OF THE MADRAS GOVERNMENT,

FOR THE MONTH OF DECEMBER 1890.

Irrigation.
Account.

READ—the following paper :—

Telegram from the Secretary to the Government of India, Public Works Department, to the Secretary to the Government of Madras, Public Works Department, dated Calcutta, 27th November 1890, No. A 201.

Your telegram 25th. Additional Rs. 1,50,000 granted for Periyár Project. More could be given if required.

ORDER—dated 1st December 1890, No. 698 I., Public Works.

One lakh of the additional grant sanctioned by the Government of India is allotted to the No. 1 Periyár division and the remaining Rs. 50,000 to the No. 2 Periyár division. The grants for the latter now stand as before the issue of G.O., No. 685 I., dated 25th November 1890, and the statement of revised distribution therein called for is not required for this division, but a statement should be submitted for the No. 1 Periyár division for which the grant has now been raised to Rs. 4,92,998 including establishment and tools and plant.

(True Extract.)

(Signed) J. PENNYCUICK, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintending Engineer, Periyár Project.
" Chief Engineer for Irrigation.
" Examiner, Public Works Accounts.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras

PUBLIC WORKS.

Dated December, 1st.

Recd. *Encl.*

G.O., 1st Dec. 1890, No. 698 I.

DECEMBER.

Periyar Project.

Orders on telegram from the Government of India granting an additional allotment of Rs. 1,50,000 for the — .

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Establishment.

Read—the following paper :—

No. 179 I.

Note by the Chief Engineer for Irrigation.

The accompanying statement showing the work establishment required in connection with the Tank Restoration Scheme for 1891-92 amounting to Rs. 26,900 as shown below is submitted to Government for sanction with effect from 1st March 1891.

2. The excess of Rs. 2,400 is wholly accounted for by the proposed increase of No. VII Party which is to be moved from the Godávari, on completion of its work there, to the Kistna, where it will be amalgamated with the small special party already separately sanctioned for that district, the whole being in charge of an Assistant or Executive Engineer under the orders of the Chief Engineer for Irrigation (see G.O., No. 363 I., dated 30th June 1890).

	RS.
No. I Party	3,384
" II "	3,624
" IV "	3,624
" V "	4,104
" VII "	7,104
" VIII "	2,472
Travelling allowance to Surveyors on transfer	188
Clearing jungle for survey operations	500
Central Office, &c.	1,900
Total ...	26,900

(Signed) G. T. WALCH,
Chief Engineer for Irrigation,
Tank Restoration Scheme.

20th November 1890.

Enclosure.

Statement showing the "Work" Establishment required for 1891-92.

Present Scale.						Proposed Scale.					
Number of Party.	Designation.	Number.	Rate.	Period.	Amount.	Number of Party.	Designation.	Number.	Rate.	Period.	Amount.
1	2	3	4	5	6	1	2	3	4	5	6
			RS.		RS.				RS.		RS.
No. I Party, T.R.S.	Surveyors	3	60	12 months.	2,160	No. I Party, T.R.S.	Surveyors	3	60	12 months.	2,160
	Lascars	17	6		1,224		Lascars	17	6		1,224
	Total ..	..	..	..	3,384		Total ..	..	..	..	3,384
No. II do. do.	Surveyors	1	80	12 months.	960	No. II do. do.	Surveyors	1	80	12 months.	960
		2	60		1,440			2	60		1,440
	Lascars	17	6		1,224		Lascars	17	6		1,224
	Total ..	..	..	..	3,624		Total ..	..	..	..	3,624
No. III do. do.	Surveyors	1	80	1 month.	80	....	*Nil.*	..	..	..	..
		2	60		120						
	Lascars	17	6		102						
	Total ..	..	..	..	302		Total ..	..	..	..	..
No. IV do. do.	Surveyors	2	80	12 months.	1,920	No. IV Party, T.R.S.	Surveyors	1	80	12 months.	960
		1	60		720			2	60		1,440
	Lascars	17	6		1,224		Lascars	17	6		1,224
	Total ..	..	..	..	3,864		Total ..	..	..	..	3,624
No. V do. do.	Surveyors	1	80	12 months.	960	No. V do. do.	Surveyors	3	80	..	2,880
		2	60		1,440		Lascars	17	17	..	1,224
	Lascars	17	6		1,224						
	Total ..	..	..	..	3,624		Total ..	..	..	..	4,104
No. VI do. do.	Surveyors	3	60	1 month.	180	....	*Nil.*	..	..	..	..
	Lascars	17	6		102						
	Total ..	..	..	..	282		Total ..	..	..	..	..
No. VII do. do.	Surveyors	1	80	12 months.	960	No. VII Party, T.R.S.	Surveyors	2	80	..	1,920
		3	60		2,160			4	60	..	2,880
	Lascars	22	6		1,584		Lascars	32	6	..	2,304
	Total ..	..	..	..	4,704		Total ..	..	..	..	7,104

No. VIII do. do.	Surveyors	1	80	12 months.	960	No. VIII do. do.	Surveyors	1	80	..	960
	Lascars	11	6		792		Lascars	11	6	..	792
	Total ..	..	..	..	2,472		Total ..	..	..	..	2,472
Work establishment attached to the office of the Chief Engineer for Irrigation.	Draftsman	1	25	..	300	Work establishment attached to the office of the Chief Engineer for Irrigation.	Draftsman	1	25	..	300
	Do.	1	22	..	264		Do.	1	22	..	264
	Clerk	1	15	..	180		Clerk	1	15	..	180
	Tracers	3	12	..	432		Tracers	2	12	..	288
	Total ..	..	..	..	1,176		Total ..	..	..	..	1,032
							Printing charges ..	..	..	..	868
	Printing charges and travelling allowances to Surveyors on transfer ..	..	..	..	1,068		Travelling allowances to Surveyors on transfer ..	..	..	..	188
							Clearing jungle for survey operations	..	..	..	500
	Grand Total ..	..	..	..	24,500		Grand Total ..	..	..	..	26,900

(Signed) G. T. WALCH,
Chief Engineer for Irrigation,
Tank Restoration Scheme.

Order—dated 1st December 1890, No. 699 I., Public Works.

Sanctioned.

2. This sanction has been registered as No. 97 I. of 1890-91.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch,

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" " " II "
" " " IV "
" " " V "
" " " VI "
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ESTABLISHMENT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 1st.

Recd. *Encl.*

G.O., 1st Dec. 1890, No. 699 I.

DECEMBER.

Tank Restoration Scheme

Statement showing the "Work" establishment required for 1891-92 in connection with the —, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following papers :—

From J. Hannan, Esq., Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated Bezváda, 5th September 1890, No. 1458 K.S.

3 Plans.	1 Statement.
3 Estimates.	1 Copy of Collector's letter.

I have the honor to forward herewith plans and estimates as per margin for the following works for sanction :—

	RS.
(1) Building a regulator across Ryves' canal at 1 mile from its head	9,152
(2) Constructing a bridge across Ryves' canal at 5th furlong 7th chain	17,180
(3) Widening the 1st mile of Ryves' canal	11,027

2. The estimates have been prepared in accordance with the instructions given in your memo. No. II/7 K.S. of 29th January 1890.

3. The plans and estimates have been countersigned by the Collector, and I forward you a copy of his letter returning them to me.

4. It is intended to utilize the cut stone of the present regulator. The usual rate has, however, been allowed for cut stone for new regulator, on the other hand nothing has been allowed for demolishing the old regulator. If the stones are got out readily from old work there will probably be some saving on the item cut stone in estimate for new work, but not much.

5. As regards the Collector's proposal to tram the silt to Kistna river utilizing the railway bridge over main canal, I doubt if this would be any cheaper than conveyance by punts. The amount set down by me in the statement of extra cost of clearance of silt and conveyance may, however, be considered as a maximum not likely to be reached. It is not possible to estimate accurately what the silting will be. I have taken two feet as the annual depth of clearance, but on consideration I think this is an over-estimate.

Enclosure.

Report to accompany plan and estimate for constructing a Regulator across the Ryves' Canal at 1 mile from its head.

1. Amount of estimate, Rs. 9,100.

2. The plan and estimate have been prepared with reference to the Chief Engineer's for Irrigation memo. No. II/7 K.S. of the 29th January 1890.

3. The present regulator at head will be demolished, and the shutters, screw shafts, &c., will be altered to suit the proposed one, for which the estimate provides.

4. The present regulator has 15 vents of 6 feet span each, the bottom width of canal being 90 feet. It is now proposed to widen the canal for one mile down by 15 feet which makes the bottom width 105 feet, hence the new regulator will have 17 vents of the above span. Two new shutters with screw shafts, &c., complete have been provided for in the estimate.

5. As all the gearing beams of 14 vents of the present regulator appear decayed and of little or no use, it is proposed to substitute new ones. New ones have been put in for the remaining one vent last closure.

6. Nothing has been allowed in the estimate for demolishing the existing regulator, as it is thought the amount likely to be realized by the sale of the old materials will cover the cost of demolishing.

(Signed) J. HANNAN,
Superintending Engineer, II Circle.

6th August 1890.

No. 175 I.

Submitted to Government. The plans and estimates have been slightly altered in this office, the latter aggregating Rs. 37,700, as shown in the margin, and are recommended for sanction.

	RS.
Widening 1st mile of Ryves' canal ...	11,000
Constructing a new regulator ...	9,100
Constructing a bridge	17,600
Total ...	37,700

2. With regard to the last paragraph of the Superintending Engineer's letter it may be noted that the cost of clearance of silt above the new regulator will, *minus* an average of the present cost of silt clearance in the same part of the canal, have to be met from funds other than "42. Major Works (Working Expenses)." It is not likely that the extra annual cost will be anything like the amount of (Rs. 8,731) estimated by the Superintending Engineer.

Chepâk,
17th November 1890.

(Signed) H. E. CLERK,
for Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

G.O., dated 21st October 1890, No. 1575 M., Local and Municipal.

Read—the following letter from A. T. ARUNDEL, Esq., Collector, Kistna District, to the Chief Secretary to Government, dated Krósúr, 30th August 1890, No. 225 Extra.

In G.O., dated 30th April 1890, Mis. No. 674 M., the Acting Secretary to Government, Public Works Department, remarked that no objection was raised to certain proposals of mine for the improvement of Bezváda, provided that no portion of the charges involved falls on Irrigation funds; he added that plans and estimates were being prepared for the works; and in G.O., dated 1st October 1889, No. 6257, Revenue, approval was given to an allotment of Rs. 11,570 out of Canal and Ferry funds for building a bridge over Ryves' canal as part of the same scheme.

2. I beg that, in connection with this letter, reference may be made to the scheme detailed in my letter, No. 2892, dated 17th May 1889, on which the above-noted Government orders were passed, and especially to the map of Bezváda, which accompanied that letter.

3. Briefly the scheme is this: to throw open to traffic both sides of Ryves' canal at Bezváda for a distance of a mile from its head; by means of two bridges to make the triangle of land between the Ryves' and the Ellore canals readily accessible; and thus to relieve the congested traffic at the head of the main canal, and allow the rapidly increasing trade of Bezváda to expand without let or hindrance in the tract of land newly opened out. The change is needed on sanitary grounds no less than on mercantile. If the canal traffic cannot be to some extent shifted from the crowded, low-lying, unhealthy old town to the new suburb, the old town will become more crowded and unhealthy still, and Bezváda from its central position will radiate disease by every railway and every canal—*vide* paragraph 8, G.O., dated 8th August 1890, No. 1167 M.

4. It is difficult for any one unacquainted with Bezváda to form an idea of the business activity now concentrated on less than half-a-mile of wharf, where passenger and cargo boats from Madras on the south and from Godávari on the north jostle one another two and three deep. To the trade of the canals has been added that of two railways—the Nizam's and the South Mahratta—and in no long time the Nellore extension from the south and the East Coast Railway to the north, with the bridge three-quarters of a mile long over the Kistna, will give a further impetus to trade, the future of which it is impossible to foresee.

5. Mr. Walch, the Chief Engineer for Irrigation, in his notes of inspection (paragraph 23-*b*, G.O., dated 24th March 1890, No. 193 I) writes:—"The Kistna district now stands first in the Presidency as regards its land revenue, second as regards its revenue from all sources. There can be no doubt that the chief agent in producing these results, and in raising this district as well as its neighbour, the Godávari, to a high and advancing state of prosperity, has been the construction of the great works of irrigation and navigation on which Government has so wisely expended large sums in recent years. There also can be no doubt, and it seems advisable to take opportunities of occasionally drawing attention to the truth, that the "*direct*" returns from the works, the returns which are shown in the money columns of the Capital and Revenue Accounts, though they are nearly 9 per cent. per annum on all expenditure, direct and indirect, are but a portion of the returns which Government really derives from its expenditure, and are but a slight indication of the incalculable benefit which the works have conferred on the people who come under their influence." The returns, both direct and indirect pointed out by Mr. Walch, will, I submit, amply warrant the further expenditure necessary for health and trade.

6. His Excellency the Governor, during his tour last December, was pleased to make himself acquainted with the particulars of the present scheme, and expressed himself as specially interested in its completion.

7. The plans and estimates referred to by the Chief Engineer (paragraph 1 above) have now been completed by the Superintending Engineer, and are being forwarded by him to Government. They comprise—

	RS.
(1) Widening Ryves' canal by 15 feet	11,027
(2) Constructing bridge over Ryves' canal	17,180
(3) Removing and reconstructing the regulator or head-sluice of Ryves' canal	9,152
(4) Rough estimate of annual *extra* cost of removing silt from Ryves' canal	8,731

8. With regard to (2) an allotment of Rs. 11,570 has been sanctioned as noted in paragraph 1 above out of Canal and Ferry funds, and sanction is now requested for an allotment of the balance from the same source.

9. With respect to (4), I may venture an opinion that the estimate is excessive. I have given some reasons for thinking this in a letter to the Superintending Engineer, but for the present it may be taken as the amount to be provided.

10. The question arises—from what source is the initial outlay of (1) Rs. 11,027 *plus* (3) Rs. 9,152, or Rs. 20,179 in all, to be met, and also the annual charge of (4) Rs. 8,731 for clearing silt? The Municipal Council of Bezváda has expressed its readiness to bear the initial outlay. But this proposal is open to two objections: first, it would require the raising of a loan, and the Municipality is likely to have other similar burdens for drainage and water-supply before long; second, and of much greater importance, if the Municipal Council meets the cost of opening Ryves' canal to navigation, it must retain the banks of the canal in its own charge for the levy of wharfage fees, warehouse rents, and so forth. I am strongly of opinion that no such arrangement should be permitted. It would inevitably lead to violent friction between the Council and the Department of Public Works, and it would be anomalous for the department to relinquish the charge of a single canal reach a mile long out of the whole canal system.

11. I would urge that, in a matter of great public importance such as this, affecting the health no less than the convenience and well-being of a town that is destined

to attain great proportions as an emporium of trade, the necessary outlay may reasonably be made from Provincial funds. This would obviate the charge falling as a debit to the Kistna Anicut Project, which the Chief Engineer, Mr. Walch, demurs to.

12. The remaining item—namely, the annual charge of Rs. 8,731 for silt clearance —may, I submit, be legitimately charged to the "Navigation" branch of the irrigation charges, inasmuch as the department will have control over both the banks of the newly navigable reach of Ryves' canal, and will hereafter be able to levy wharfage fees and warehouse rents throughout the whole length. The new Canal and Public Ferries Act, 1890, now gives legal authority for the levy of such fees, and the amount to be realized in rents and fees from the existing wharves in Bezváda ought to cover the sum required.

Order—dated 21st October 1890, No. 1575 M., Local and Municipal.

Paragraph 8 of the Collector's letter read above will be considered in the Revenue, paragraph 11 in the Financial, and paragraph 12 in the Public Works, Departments.

2. The Collector's proposals are approved so far as the Local and Municipal Department is concerned.

(True Extract.)

(Signed) J. F. PRICE,
Chief Secretary.

Order—dated 1st December 1890, No. 700 I., Public Works.

The estimates aggregating Rs. 37,700 submitted by the Chief Engineer for Irrigation are sanctioned and registered as No. 98 I. of 1890-91.

2. The extra cost of removing silt from the Ryves' canal above the new regulator will when incurred be charged to "Provincial, Irrigation, 43. Minor Works and Navigation" "Irrigation and Navigation Works for which neither Capital nor Revenue Accounts are kept" under which head it is intended that the expenditure on the construction of wharves shall come.

3. Separate orders will be issued in the Revenue and Financial Departments regarding the provision of funds for the works now sanctioned.

4. The following deferred telegram will be sent to the Superintending Engineer, II Circle:—

"Your letter 1458, fifth September. Estimates for alterations Ryves' canal head sanctioned. Funds will be provided shortly. Works may be proceeded with."

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle.
" Examiner, Public Works Accounts.
" Revenue Department.
" Financial Department.
" Local and Municipal Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 1st.

Recd. *Encl.*

G.O., 1st Dec. 1890, No. 700 I.

DECEMBER.

Ryves' Canal

Estimates aggregating Rs. 37,700 for alterations of head of the —, sanctioned with remarks.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From Major D. McNEIL CAMPBELL, R.E., Superintending Engineer, Periyár Project, to the Chief Engineer, Public Works Department, dated Periyár, 17th November 1890, No. 2038 P.R.

I have the honor to submit, for approval and sanction, a revised estimate for road to C and tramway turbine channel, amounting to Rs. 4,430.

2. The amount of the original estimate sanctioned for this work is Rs. 1,340 and the difference, viz., Rs. 3,090, may be met from the provision for unforeseen works at your disposal, as the balance now available under the sub-head O. Miscellaneous is only Rs. 100.

3. The necessity for the revision of the estimate in question is fully explained in the report attached to the revised estimate and in the comparative statement.

ORDER—dated 2nd December 1890, No. 705 I., Public Works.

The following revised estimate, amounting to Rs. 4,430, for road to C and tramway turbine channel, is sanctioned in supersession of the estimate of Rs. 1,340 sanctioned by the Chief Engineer, Periyár Project, the excess of Rs. 3,090 being met from the balance of the amount reserved for unforeseen works of the Periyár Project, which will then be reduced to Rs. 43,073 :—

Major Works (Construction).
49. Irrigation.
Periyár Project.
I. Works.
(1) Head Works.
O. Miscellaneous.

	RS.
Road to C and tramway turbine channel, estimate	4,430

2. This sanction has been registered as No. 99 I. of 1890-91.

(True Extract.)

(Signed) J. PENNYCUICK, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintendent of Works, Periyár Project, with 4 enclosures.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras

PUBLIC WORKS.

Dated December, 2nd.

Recd. *Encl.*

G.O., 2nd Dec. 1890, No. 705 I.

DECEMBER.

Periyar Project

Revised estimate, amounting to Rs. 4,430, for road to C and tramway turbine channel, sanctioned with remarks.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper:—

From Major D. McNEIL CAMPBELL, R.E., Superintending Engineer, Periyár Project, to the Chief Engineer, Public Works Department, dated Periyár, 15th November 1890, No. 2015 P.R.

I have the honor to forward, herewith, plans and estimates, amounting to Rs. 4,300 each, for constructing two syphon culverts in the sixth reach of the main channel at 21st mile, 4 furlongs and 475 feet and 21st mile, 7 furlongs and 322 feet, respectively, for favor of sanction.

2. These revised designs are proposed to be adopted in lieu of cast-iron pipe syphons, plan No. 67, estimated to cost at Rs. 6,150 each. The present designs are considered to be cheaper and are therefore recommended for sanction.

3. The designs are the same except as regards levels.

4. The saving of Rs. 3,700 will be added to the provision for unforeseen works at your disposal.

Order—dated 2nd December 1890, No. 706 I., Public Works.

The following estimate, amounting to Rs. 8,600, for constructing two syphon culverts in the sixth reach of the Periyár main channel, is sanctioned in lieu of the provision of Rs. 12,300 made in the sanctioned estimate for the project for two inverted syphons, the saving of Rs. 3,700 effected by the present estimate being added to the amount reserved for unforeseen works, which will then be increased to Rs. 46,773:—

Major Works (Construction).
49. Irrigation.
Periyár Project.
I. Works.
(2) Main Canals and Branches.
Main Canal, Sixth Reach.
F. Cross Drainage Works.

		RS.
Constructing a syphon culvert	at 21st mile, 4 furlongs and 475 feet ...	4,300
	at 21st „ 7 „ 322 „ ...	4,300
	Total ...	8,600

2. This sanction has been registered as No. 100 I. of 1890-91.

(True Extract.)

(Signed) J. PENNYCUICK, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
„ Superintendent of Works, Periyár Division, with nine enclosures.
„ Examiner, Public Works Accounts.
„ Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 2nd.

Recd. *Encl.*

G.O., 2nd Dec. 1890, No. 706 I.

DECEMBER.

Periyar Main Channel

Estimate, amounting to Rs. 8,600, for constructing two syphon culverts in the sixth reach of the —, sanctioned with remarks.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

From Major D. McNEIL CAMPBELL, R.E., Superintending Engineer, Periyár Project, to the Chief Engineer, Public Works Department, dated Periyár, 17th November 1890, No. 2036 P.R.

I have the honor to forward for sanction an estimate, amounting to Rs. 2,600, for constructing a bridge in sixth reach, main channel, at 21st mile, 5 furlongs and 460 feet in lieu of plan No. 72.

2. The Executive Engineer reports that the site is the same as that for the original design, that the width of the channel at this site is 34·2 feet at bottom, with side slopes of $1\frac{1}{2}$ to 1, the fall being 2·24 feet per mile.

3. The velocity (4·45 feet per second) is high, but this will not affect the work, as the soil at the proposed site is soft rock and hard gravel above and below for a considerable distance. The estimate is recommended for sanction.

4. The saving of Rs. 860 effected by the revision of the estimate is to be transferred to the provision for unforeseen works at your disposal.

Order—dated 2nd December 1890, No. 707 I., Public Works.

The following estimate, amounting to Rs. 2,600, for constructing a bridge in the sixth reach of the Periyár main channel is sanctioned in lieu of the provision of Rs. 3,460 made for the work in the sanctioned estimate for the project, the saving of Rs. 860 effected by the present estimate being added to balance of the amount reserved for unforeseen works, which will then be increased to Rs. 47,633 :—

Major Works (Construction).
49. Irrigation.
Periyár Project.
I. Works.
(2) Main Canals and Branches.
Main Canal, Sixth Reach.
G. Bridges.

	RS.
Constructing a bridge at 21st mile, 5 furlongs and 460 feet, estimate.	2,600

2. This sanction has been registered as No. 101 I. of 1890-91.

(True Extract.)

(Signed) J. PENNYCUICK, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Chief Engineer or Irrigation.
„ Superintendent of Works, Periyár Division, with four enclosures.
„ Examiner, Public Works Accounts.
„ Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 2nd.

Recd. *Engl.*

G.O., 2nd Dec. 1890, No. 707 I.

DECEMBER.

Periyar Main Channel

Estimate, amounting to Rs. 2,600, for constructing a bridge in the sixth reach of the —, sanctioned with remarks.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following papers :—

From Superintending Engineer, II Circle, dated 8th August 1890, No. 1174 K.S.
To do. do. II „ „ 23rd „ „ „ 112 K.S.

From J. HANNAN, Esq., Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated Bezváda, 29th October 1890, No. 1892 K.S.

I have the honor to resubmit the plans and estimates for the Bantumille canal extension returned with your memorandum No. II/112 K.S. of 23rd August.

2. The instructions contained in the above memorandum have been attended to.

3. I regret the stupid mistake made in fixing the level of the lock lower sill.

4. It has been ascertained by the Executive Engineer that the maximum flood in the Upputér is below H.T.L., the former being + 0·38 and the latter + 0·77. The latter has, therefore, been taken in fixing the headway of bridge.

5. In previous letter No. 1174, dated 8th August 1890, I pointed out the source from which funds for this work were to be obtained.

ENCLOSURE.

ESTIMATE FORM—Abstract—Classified.

Sub-head.	Names of works.	Amount of estimate for individual work.	Total of sub-heads.	Total for each canal or distributary.	Total of each main head.
1	2	3	4	5	6
	MAJOR WORKS (CONSTRUCTION).	RS.	RS.	RS.	RS.
	49. IRRIGATION.				
	Kistna Delta System.				
	Eastern Section.				
	I. Works.				
	(2) Main Canals and Branches.				
	Bantumilli Canal "Widening and Deepening."				
L. Earthwork ..	Excavation	15,300	15,300		
	Bantumilli Canal "Extension."				
B. Land ..	Compensation	6,200	6,200		
I. Navigation ..	Lock	24,800			
	Weir	2,940	27,740		
L. Earthwork ..	Excavation	46,980	46,980		
O. Miscellaneous.	Demarcation stones	480	480		
				96,700	96,700

BEZVADA,
29th October 1890.

(Signed) J. HANNAN,
Superintending Engineer, II Circle.

No. 181 I.

Submitted to Government with a recommendation that the estimates, aggregating Rs. 96,700, be sanctioned, Rs. 5,975 of the amount required to meet the proposed outlay being met from the amount reserved for unforeseen works of the Kistna delta system and the remainder from the provisions made for the following items in the classified abstract estimate printed in Proceedings of Madras Government, No. 577 I., dated 1st October 1888 :—

	Sanctioned provision.
	RS.
Item 334, Escape weir at Pandraka	3,300
„ 335, Do. at end	3,160
„ 339, Pandraka lock	21,500
„ 340, Lock at end	22,830
„ 345, Earthwork in other reaches	39,935
Total ...	90,725

CHEPÂK,
25th November 1890.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 4th December 1890, No. 710 I., Public Works.

The estimates, amounting to Rs. 96,700, for the extension to the Upputér of the Bantumille canal, in the Kistna Eastern delta, are sanctioned, the amount required to cover the proposed outlay being met from the sources indicated in the foregoing endorsement of the Chief Engineer for Irrigation. The balance still available for unforeseen works is Rs. 1,73,891.

2. This sanction has been registered as No. 102 I. of 1890-91.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, II Circle.
„ Examiner, Public Works Accounts, with 28 enclosures.
„ Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 4th.

Recd. *Exd.*

G.O., 4th Dec. 1890, No. 710 I.

DECEMBER.

Bantumille Canal in the Kistna Eastern Delta

Estimates, amounting to Rs. 96,700, for the extension to the Upputér of the —, sanctioned, with remarks.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

Proceedings of the Board of Revenue (Revenue Settlement, Land Records and Agriculture), dated 24th November 1890, No. 361.

MR. CLOGSTOUN.

Resolution—dated 24th November 1890, No. 361.

The following statement shows the revised estimate of the revenue due to irrigation for the current year and the budget estimate for 1891-92 for class I. Productive Public Works. Full details are given in the appendix. The figures relating to the Barur project were furnished by the Collector of Salem only on the 19th current :—

	Name of work.	Actuals of 1889-90.	Revised estimate for 1889-90.	Sanctioned estimate for 1890-91.	Revised estimate for 1890-91.	Budget estimate for 1891-92.
		RS.	RS.	RS.	RS.	RS.
1	Godávari anicut	20,77,555	20,70,000	21,10,000	21,50,000	22,00,000
2	Kistna do.	14,90,588	14,50,000	15,00,000	15,50,000	16,00,000
3	Cauvery do.	29,64,063	29,60,000	29,70,000	29,70,000	31,00,000
4	Pennair do.	2,46,732	2,13,000	2,40,000	2,48,000	2,50,000
5	Sangam do.	2,49,391	2,45,000	2,75,000	2,75,000	3,00,000
6	Srivaikuntham anicut	1,80,572	1,82,000	1,90,000	1,82,000	1,85,000
7	Kurnool-Cuddapah canal	63,758	75,000	80,000	65,000	70,000
8	Barur tank project	4,558	5,000	10,000	5,000	10,000
	Total ..	72,77,217	72,00,000	73,75,000	74,45,000	77,15,000

2. The actuals of 1889-90 exceeded the revised estimate for that year under all the systems except the Srívaikuntham anicut, the Barur project and the Kurnool-Cuddapah canal. The increase under the Kistna and Pennair anicut systems amounted to Rs. 40,000 and Rs. 33,000, respectively. Various improvements have been carried out from time to time to the Kistna anicut channels during the past few years, the effect of which on the extension of cultivation could not be correctly gauged in framing the estimates. The increase under the Pennair anicut was due to favorable season. The variations under the other systems are small and do not call for remarks. The decrease under the Srívaikuntham anicut (Rs. 2,000) was apparently the result of a succession of bad seasons. The decrease under the Kurnool-Cuddapah canal was due partly to the favorable character of the season, in consequence of which canal water was not used so largely for dry crops as in the previous year, and partly to the withdrawal of the concession granted in the year 1888-89 of charging half the usual water-rate.

3. The revised estimate for 1890-91 and the budget estimate for 1891-92 have been fixed at Rs. 74,45,000 and 77,15,000, respectively. The increased provision made in the case of the Godávari, Kistna, Pennair and Sangam systems is generally within the average increase realized during the last five years as shown on the margin. Under the Cauvery system, a large increase may be expected to accrue when the new settlement rates are introduced into the delta taluks. A portion of the increase will probably accrue in 1891-92 and has been allowed for in the budget estimate of that year. The Collector of Salem fixes the estimates under the Barur tank project at Rs. 5,000 for 1890-91 and at Rs. 10,000 for 1891-92. These figures have been adopted. The revenue under the Srívaikuntham anicut has been steadily declining during the past four years owing to bad seasons. The present year has also not been favorable and both the revised estimate for the current year and the budget estimate for the next year have therefore been fixed much below the sanctioned amount for 1890-91.

System.	Actuals of 1889-90.	Average annual increase during the last five years.	Total for 1890-91.	Total for 1891-92
	RS.	RS.	RS.	RS.
Godávari	20,77,000	77,000	21,54,000	22,31,000
Kistna	14,90,000	88,000	15,78,000	16,66,000
Cauvery	29,64,000	5,000	29,69,000	29,74,000
Pennair	2,46,000	..	2,46,000	2,46,000
Sangam	2,49,000	35,000	2,84,000	3,19,000
Srívaikuntham	1,80,000	..	1,80,000	1,80,000
Kurnool-Cuddapah	64,000	1,000	65,000	66,000
Total ..	72,70,000	2,06,000	74,76,000	76,82,000

(True Extract.)

(Signed) P. RAJARATNA MUDALIAR,
Secretary.

APPENDIX.

BUDGET estimate for the portion of land revenue due to irrigation for 1891-92.

—	Actuals of 1889-90.	Budget estimate for 1890-91.	Revised estimate for 1890-91.	Budget estimate for 1891-92.
1	2	3	4	5
REVENUE FROM PRODUCTIVE PUBLIC WORKS.	RS.	RS.	RS.	RS.
PORTION OF LAND REVENUE DUE TO IRRIGATION.				
Godávari Delta.				
Irrigation revenue	20,77,555	21,10,000	21,50,000	22,00,000
Deduct revenue due to old irrigation	1,24,000	1,23,000	1,24,000	1,24,000
Revenue due to the system	19,53,555	19,87,000	20,26,000	20,76,000
Share of enhanced land revenue	1,55,620	1,50,000	1,55,000	1,60,000
Total ..	21,09,175	21,37,000	21,81,000	22,36,000
Deduct collection charges in the Civil Department ..	1,05,459	1,06,850	1,09,050	1,11,800
Net revenue ..	20,03,716	20,30,150	20,71,950	21,24,200
Kistna Delta.				
Irrigation revenue	14,90,588	15,00,000	15,50,000	16,00,000
Deduct revenue due to old irrigation	71,000	71,000	71,000	71,000
Revenue due to the system	14,19,588	14,29,000	14,79,000	15,29,000
Share of enhanced land revenue	1,65,863	1,58,000	1,75,000	1,85,000
Total ..	15,85,451	15,87,000	16,54,000	17,14,000
Deduct collection charges in the Civil Department ..	79,272	79,350	82,700	85,700
Net revenue ..	15,06,179	15,07,650	15,71,300	16,28,300

Budget estimate for the portion of land revenue due to irrigation for 1891-92—*cont.*

—	Actuals of 1889-90.	Budget estimate for 1890-91.	Revised estimate for 1890-91.	Budget estimate for 1891-92.
	6	7	8	9
REVENUE FROM PRODUCTIVE PUBLIC WORKS—*cont.*	RS.	RS.	RS.	RS.
PORTION OF LAND REVENUE DUE TO IRRIGATION—*cont.*				
Cauvery Delta.				
Irrigation revenue	29,64,063	29,70,000	29,70,000	31,00,000
Deduct revenue due to old irrigation	23,65,000	23,65,000	23,65,000	23,65,000
Revenue due to the system	5,99,063	6,05,000	6,05,000	7,35,000
Share of enhanced land revenue	1,41,220	1,40,000	1,42,000	2,02,000
Total ..	7,40,292	7,45,000	7,47,000	9,37,000
Deduct collection charges in the Civil Department ..	37,015	37,250	37,350	46,850
Net revenue ..	7,03,277	7,07,750	7,09,650	8,90,150
Pennair Anicut.				
Irrigation revenue	2,46,732	2,40,000	2,48,000	2,50,000
Deduct revenue due to old irrigation	1,17,000	1,16,000	1,17,000	1,17,000
Revenue due to the system	1,29,732	1,24,000	1,31,000	1,33,000
Share of enhanced land revenue	17,149	16,000	17,000	17,000
Total ..	1,46,881	1,40,000	1,48,000	1,50,000
Deduct collection charges in the Civil Department ..	7,344	7,000	7,400	7,500
Net revenue ..	1,39,537	1,33,000	1,40,600	1,42,500
Sangam Project.				
Irrigation revenue	2,49,391	2,75,000	2,75,000	3,00,000
Deduct revenue due to old irrigation	1,39,000	1,30,000	1,39,000	1,39,000
Revenue due to the system	1,10,391	1,45,000	1,36,000	1,61,000
Share of enhanced land revenue	6,930	5,000	10,000	12,000
Total ..	1,17,321	1,50,000	1,46,000	1,73,000
Deduct collection charges in the Civil Department ..	5,866	7,500	7,300	8,650
Net revenue ..	1,11,455	1,42,500	1,38,700	1,64,350
Srivaikuntham Anicut.				
Irrigation revenue	1,80,572	1,90,000	1,82,000	1,85,000
Deduct revenue due to old irrigation	79,000	79,000	79,000	79,000
Revenue due to the system	1,01,572	1,11,000	1,03,000	1,06,000
Share of enhanced land revenue	1,838	2,000	2,000	2,000
Total ..	1,03,410	1,13,000	1,05,000	1,08,000
Deduct collection charges in the Civil Department ..	5,171	5,650	5,250	5,400
Net revenue ..	98,239	1,07,350	99,750	1,02,600
Kurnool Canal.				
Irrigation revenue	63,758	80,000	65,000	70,000
Share of enhanced land revenue	..	..	..	..
Total ..	63,758	80,000	65,000	70,000
Deduct collection charges in the Civil Department ..	3,188	4,000	3,250	3,500
Net revenue ..	60,570	76,000	61,750	66,500
Barur Tank.				
Irrigation revenue	4,558	10,000	5,000	10,000
Deduct revenue due to old irrigation	2,000	6,000	2,000	2,000
Revenue due to the system	2,558	4,000	3,000	8,000
Share of enhanced land revenue	4	..	..	..
Total ..	2,562	4,000	3,000	8,000
Deduct collection charges in the Civil Department ..	128	200	150	400
Net revenue ..	2,434	3,800	2,850	7,600

Budget estimate for the portion of land revenue due to irrigation for 1891-92—*cont.*

—	Actuals of 1889-90.	Budget estimate for 1890-91.	Revised estimate for 1890-91.	Budget estimate for 1891-92.
	10	11	12	13
REVENUE FROM PRODUCTIVE PUBLIC WORKS—*cont.*	RS.	RS.	RS.	RS.
PORTION OF LAND REVENUE DUE TO IRRIGATION—*cont.*				
Total of all the systems.				
Irrigation revenue	72,77,217	73,75,000	74,45,000	77,15,000
Deduct revenue due to old irrigation	28,97,000	28,90,000	28,97,000	28,97,000
Revenue due to the system	43,80,217	44,85,000	45,48,000	48,18,000
Share of enhanced land revenue	4,88,633	4,71,000	5,01,000	5,78,000
Total ..	48,68,850	49,56,000	50,49,000	53,96,000
Deduct collection charges in the Civil Department ..	2,43,443	2,47,800	2,52,450	2,69,800
Net revenue ..	46,25,407	47,08,200	47,96,550	51,26,200

ORDER—dated 4th December 1890, No. 712 I., Public Works.

Communicated to the Chief Engineer for Irrigation who will adopt the estimates of revenue of Major (Productive) Works in the budget estimates for the ensuing year.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" " II "
" " III "
" " IV "
" " VI "
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 4th.

Recd. *Encl.*

G.O., 4th Dec. 1890, No. 712 I.

DECEMBER.

Revised estimate of the revenue due to irrigation for 1890-91 and budget estimate for 1891-92

Proceedings of the Board of Revenue on the —, communicated to the Chief Engineer for Irrigation with remarks.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From J. HANNAN, Esq., Superintending Engineer, II Circle, to the Chief Engineer for Irrigation (through the Examiner, Public Works Accounts), dated Bezváda, 1st November 1890, No. 1936 K.S.

I have the honor to forward herewith a completion report for the work "widening Polraz canal from head to 7 miles 56 chains" in the Gudiváda division, and to request that you will be good enough to obtain the sanction of Government to the excess of Rs. 397 over the estimate amount of Rs. 13,075 sanctioned in G.O., No. 313 I., dated 2nd July 1889.

2. The excess is explained to be due to a greater quantity of cutting at the sides in two places for a length of 5 furlongs for improving the alignment of the margin of canal, and to the clearing of silt in the bed of canal between $5\frac{1}{2}$ and $7\frac{5}{8}$ miles not provided for in the estimate, having been found necessary, and carried out.

3. The excess, amounting to Rs. 397, may be met from the balance available for unforeseen works of the Kistna delta system.

ORDER—dated 4th December 1890, No. 713 I., Public Works.

The Examiner of Public Works Accounts is authorized to pass the outlay incurred on the work referred to, the excess of Rs. 397 being met from the balance of the lump sum provision for unforeseen works of the Kistna delta system, which will then be reduced to Rs. 1,73,494.

2. This sanction has been registered as No. 103 I. of 1890-91.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 4th.

Recd. *Encl.*

G.O., 4th Dec. 1890, No. 713 I.

DECEMBER.

Polraz Canal in the Gudivada Division

The Examiner, Public Works Accounts, authorized to pass the outlay incurred in widening the —.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following paper:—

From A. T. ARUNDEL, Esq., Collector of the Kistna District, to the Secretary to Government, Public Works Department, dated Masulipatam, 10th November 1890, No. 8291.

Adverting to G.O., No. 69 I., dated 6th February 1890, I have the honor to inform you that, in accordance with the wishes of the Bezváda Municipality, a bathing ghât in front of the anicut is to be constructed at a cost of Rs 374; the estimate for which has been approved by the Superintending Engineer, II Circle.

2. Certain other proposals of the council are recommended by the Superintending Engineer to be postponed for the present on account of their cost.

3. The Superintending Engineer requests the sanction of Government for the execution of the work by the Department of Public Works under para. 326 of their code and I beg that this may be given.

4. The municipality have been requested to address Government to place the necessary funds at the disposal of the Superintending Engineer.

5. The resolution of the Municipal council is enclosed.

ORDER—dated 4th December 1890, No. 714 I., Public Works.

The execution by this department of the work of constructing a bathing ghât in front of the Kistna anicut at Bezváda is sanctioned, the cost of the work and the usual charges for establishment and tools and plant being met from Municipal funds of the town of Bezváda.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle.
" Examiner, Public Works Accounts.
" Revenue Department.
" Local and Municipal Department.

IRRIGATION.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 4th.

Recd. *Encl.*

G.O., 4th Dec. 1890, No. 714 I.

DECEMBER.

Bathing ghat in front of the Kistna anicut at Bezvada

The execution by this department of the work of constructing a —, sanctioned with remarks.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following paper:—

Proceedings of the Board of Revenue (Land Revenue), dated 15th November 1890, Mis. No. 7258.

MR. H. W. BLISS.

Read—the following letter from W. A. HAPPELL, Esq., Collector of the Godávari District, to the Secretary to the Commissioners of Land Revenue, dated Cocanada, 3rd November 1890, No. 539:—

I have the honor to submit, herewith, for approval and publication in the *Fort St. George Gazette*, a draft notification for the acquisition, under the Land Acquisition Act, of *a*1—63 of Nimebadi jeroyiti (*i.e.*, zemindari jeroyiti granted on favorable assessment) in the zemindari village of Vella, in the Rámachandrapuram taluk, for "depositing silt on the south side of Vella south side channel from the junction of Vella lock and weir channels up to the new inlet." As there is a dispute as regards its title between its occupier and the zemindarni of Vella, I think it desirable to acquire the land under the Act.

Resolution—dated 15th November 1890, Mis. No. 7258.

Submitted to Government for approval and publication.

(A true Copy and Extract.)

(Signed) H. A. SIM,
Acting Secretary.

No. 7139, Revenue.

Transferred to the Public Works Department (Irrigation Branch).

FORT ST. GEORGE,
20th November 1890.

(Signed) C. A. GALTON,
Secretary to Government.

ORDER—dated 4th December 1890, No. 716 I., Public Works.

Ordered that the notification be published in the *Fort St. George Gazette*.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" Revenue Department.

IRRIGATION.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 4th.

Recd. *Encl.*

G.O., 4th Dec. 1890, No. 716 I.

DECEMBER.

Land

Notification for the acquisition of certain — required for depositing silt in Vella village, Rámachandrapuram taluk, Godávari district, ordered to be published in the *Fort St. George Gazette.*

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

Read—the following paper :—

Proceedings of the Board of Revenue (Land Revenue), dated 20th November 1890, Mis. No. 7381.

Mr. H. W. Bliss.

Read—the following letter from E. TURNER, Esq., Collector of Madura, to the Secretary to the Commissioners of Land Revenue, dated Madura, 11th November 1890, No. 462 :—

I have the honor to submit herewith draft declaration and schedule of lands required for the Periyár project channels noted in the margin, in Nachikulam and Tallakulam villages, Madura taluk, and to request that the Board will be pleased to move the Government to publish the same in the *Fort St. George Gazette.*

1. For the drainage channel from the tunnel in 6½ miles near Mela Nachikulam in the 1st Reach main channel.
2. For the Tandalai Branch 4th Branch channel.

2. The Deputy Collector, Madura division, may be authorized to perform the functions of a Collector under the Act and to take order for the acquisition of the lands.

Resolution—dated 20th November 1890, Mis. No. 7381.

Submitted to Government for approval and publication.

(A true Copy and Extract.)

(Signed) H. A. SIM,
Acting Secretary.

No. 7189, Revenue.

Transferred to the Public Works Department (Irrigation Branch).

Fort St. George,
22nd November 1890.

(Signed) C. A. GALTON,
Secretary to Government.

Order—dated 5th December 1890, No. 718 I., Public Works.

The notification will be published in the *Fort St. George Gazette.*

(True Extract.)

(Signed) J. PENNYCUICK, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintending Engineer, Periyár Project.
" Chief Engineer for Irrigation.
" Revenue Department.

IRRIGATION.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 5th.

Recd. *Encl.*

G.O., 5th Dec. 1890, No. 718 I.

DECEMBER.

Lands

Notification for the acquisition of certain — required for the Periyár project channels in Nachikulam and Tallakulam villages, Madura district, ordered to be published in the *Fort St. George Gazette.*

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper:—

From G. D. WYBROW, Esq., Superintending Engineer, I Circle, to the Chief Engineer for Irrigation, dated Dowlaishweram, 12th November 1890, No. 368 V.Z.

I have the honor to state that the Executive Engineer, Vizagapatam Division, surrenders the following allotments, and to request that you will be so good as to resume the same for the reasons given for each surrender:—

Irrigation and Navigation.
Works for which neither Capital nor Revenue Accounts are kept.

	RS.
Minor original works	1,500

The existing allotment is Rs. 3,500, and the outlay to end of September last was Rs. 1,014 only. The amount now surrendered was originally intended for improving irrigation works in the Pálkonda taluk, the estimates for which are not ready yet.

Agricultural Works.
Repairs.

	RS.
River Conservancy	500

The existing allotment is Rs. 1,000 and there was no expenditure against it to end of September. The reason given for the first surrender equally applies to this relinquishment.

ORDER—dated 5th December 1890, No. 719 I., Public Works.

The sum of Rs. 1,500 surrendered from the first item will be credited to the reserve under Irrigation and Navigation Works for which neither Capital nor Revenue Accounts are kept, Minor Original Works, and Rs. 500 surrendered from the second item to the reserve under Agricultural Works, Repairs.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 5th.

Recd. *Encl.*

G.O., 5th Dec. 1890, No. 719 I.

DECEMBER.

Funds

Orders on letter from the Superintending Engineer, I Circle, surrendering certain — in Vizagapatam division.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper:—

No. 180 I.

Note by the Chief Engineer for Irrigation.

In the schedule of demands on Imperial funds for expenditure on Irrigation Major works during 1891-92, printed in Proceedings of Madras Government, No. 536 I., dated 23rd September 1890, a sum of Rs. 14,19,000 was applied for for the following works under "49. Major Works (Construction)" "or 49. Irrigation—Capital Expenditure not charged to Revenue" as it has hitherto been called:—

	RS.
Godávari delta	72,000
Kistna do.	5,38,000
Sangam anicut project	11,000
Barur tank project	11,000
Periyár project	7,87,000
Total ...	14,19,000

2. In its letter No. 69 A.I., dated 15th October 1890, printed in Proceedings of Madras Government, No. 622 I., dated 4th November 1890, the Government of India sanctioned provisionally only Rs. 13,00,000 against Rs. 14,19,000 applied for, the distribution of the sanctioned amount being left to the discretion of this Government and the total amount sanctioned being subject to reduction later on if necessity arises. But in para. 5 of its Circular No. 147 A.G., dated 21st October 1890, communicated with G.O., No. 3032 W., dated 14th November 1890, the Government of India however calls for reports of such modifications of the amounts applied for in the schedule as may be considered desirable, the consideration of the schedules being deferred till 15th December next.

3. On receipt of the detailed budget estimates from the Superintending Engineers it is found that, except in the case of the Barur tank project, the amounts applied for in the schedule of demands do not admit of reduction, and that a further addition of Rs. 81,000 to the Rs. 14,19,000 is required, as shown below:—

	RS.
(1) Pennér anicut system	10,000
(2) Sangam do.	21,000
(3) Kalingaroyen channel	58,600
Total ...	89,600
(4) Deduct the portion not required for the Barur tank project ...	8,600
Net Total ...	81,000

Item (1).—This amount is required for the Nellore tank supply channel, for which more work than was originally supposed is found necessary.

Item (2).—For the Sangam anicut system a sum of Rs. 21,000 is required in addition to Rs. 11,000 applied for in the schedule to admit of a vigorous prosecution of the minor channels, for which estimates are expected to be ready by the middle of next month. The total proposed grant is Rs. 32,000 against a probable unspent balance of Rs. 76,000 on 1st April next.

Item (3).—On the Kalingaroyen channel in the Coimbatore district, which was in Proceedings of Madras Government, No. 332 I., dated 8th June 1888, proposed to be classed under Major (Productive) works and for which estimates were submitted to the Government of India with letter No. 520 I., dated 16th September 1890, a sum of Rs. 58,600 is required if the estimates are likely to be sanctioned before the end of March next.

Item (4).—Owing to the savings on completed works of the Barur tank project the sum of Rs. 11,000 applied for in the schedule of demands is not fully required.

A sum of Rs. 2,400 is sufficient to complete the new head to the Agaram channel, the only work which will remain to be completed next year.

4. The total sum required, which is thus Rs. 15 lakhs, viz., Rs. 14,19,000 applied for in the schedule of demands and Rs. 81,000, the addition now required, is two lakhs more than the sanctioned amount of 13 lakhs. It is suggested that an application be made to the Government of India to increase the provisional sanction of 13 lakhs to 15 lakhs.

CHEPÂK,
22nd November 1890.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 5th December 1890, No. 720 I., Public Works.

The Government of India will be requested to sanction an increase of two lakhs to the amount of 13 lakhs provisionally sanctioned for next year under "49. Major Works (Construction)."

2. The following letter will be sent to the Government of India.

(Here enter No. 721 I., dated 5th December 1890.)

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" " " II "
" " " IV "
" " " VI "
" Superintendent of Works, No. I Periyár Division.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION:
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 5th.

Recd. *Encl.*

G.O., 5th Dec. 1890, No. 720 I.

DECEMBER.

Funds

Ordered that the Government of India be requested to sanction an increase of two lakhs to the amount of thirteen lakhs sanctioned for next year under "49. Major Works (Construction)."

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

LETTER—from

G. T. WALCH, ESQ.,
Joint Secretary to the Government of Madras,
Public Works Department,
Irrigation Branch,

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,
PUBLIC WORKS DEPARTMENT.

SIR,

In forwarding, herewith, a copy of Proceedings of Madras Government, No. 720 I., dated 5th December 1890, I am directed to request that the Government of India will be pleased to increase by two lakhs the amount provisionally sanctioned in your letter No. 69 A.I., dated 15th October 1890, for expenditure next year under "49. Major Works (Construction)."

I have the honor to be,
Sir,
Your most obedient servant,

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

FORT ST. GEORGE,
5th December 1890.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 5th.

Recd. *Encl.*

5th Dec. 1890, No. 721 I.

DECEMBER.

Funds

Requesting to increase by two lakhs the amount sanctioned for next year under "49. Major Works (Construction)."

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following paper :—

Telegram from the Secretary to the Government of India, Public Works Department, to the Joint Secretary to the Government of Madras, Public Works Department, Irrigation Branch, dated Calcutta, 5th December 1890, No. A 206.

Your telegram 17th ultimo. Additional Rs. 92,000 granted Rushikulya Project.

ORDER—dated 6th December 1890, No. 727 I., Public Works.

Communicated to the officers concerned with reference to Proceedings of the Madras Government, No. 645 I. of 8th November 1890, and No. 667 I. of 17th idem.

2. The Examiner of Public Works Accounts will now issue credit orders to the Executive Engineer to the extent applied for.

3. The following urgent telegram will be sent to the Superintending Engineer, I Circle, and to the Executive Engineer, Rushikulya Division :—

"India sanctioned additional grant Rs. 92,000 for Rushikulya including establishment. Expedite distribution statement."

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, I Circle.
„ Examiner, Public Works Accounts.
„ Revenue Department.

IRRIGATION.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 6th.

Recd. *Enot.*

G.O., 6th Dec. 1890, No. 727 I.

DECEMBER.

Rushikulya Project

Telegram from the Government of India sanctioning an additional grant of Rs. 92,000 for the —, communicated with remarks to the officers concerned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From J. HANNAN, Esq., Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated Bezváda, 17th November 1890, No. 2070 K.S.

1 D. and A. estimate.
1 Report.
1 Specification.
1 Data.
1 Plan of surplus sluices.
1 Tracing of site plan.
2 Tracings of fender piles bridge.

With reference to your memo. No. II/26 K.S. of 15th February 1890, I have the honor to forward herewith plans, estimates, &c., as per margin, for constructing Nallamadu new surplus sluices at 28 miles 1 furlong 225 feet, Commamur canal, and to request sanction of Government for the same.

2. The estimate amounts to Rupees 16,500 against the project provision of Rs. 40,690 for Nallamadu aqueduct, item No. 976 of revised statement of project estimates, and the balance of Rs. 26,890 may therefore be credited to the provision for unforeseen works.

3. The construction of the above aqueduct was dispensed with, and the building of the new surplus sluices ordered in its stead—*vide* para. 29 of the Chief Engineer's note embodied in G.O., No. 321 I. of 21st March 1884, and para. 43 of the note embodied in G.O., No. 156 I. of 1st March 1888.

4. The report accompanying gives all the information about the work, and the instructions given in your memorandum under reference have been attended to.

ENCLOSURE.

REPORT to accompany estimate for constructing Nallamadu new surplus sluices, 10 vents of 9 feet span each, Rs. 16,500.

Instructions for the preparation of this estimate were originally given in para. 29 of the Chief Engineer for Irrigation's notes of inspection of 1884 printed with G.O., No. 321 I., dated 21st March 1884, and are as follow :—

"In the floods of 1883, 1·7 feet of water passed over the work, and the flood of 1882, comparing the registers at the surplus sluices, was ·75 feet higher than that of 1883. The arrangements proposed by Colonel Mullins for passing the Nallamadu floods were (1) the outlet of 2,150 feet, (2) the old Nallamadu surplus sluices, (3) a new aqueduct of 17 vents 8 feet span, and (4) a second outlet of 1,800 feet immediately below the aqueduct. Inlets are not necessary here, as the canal water is very nearly at ground level, so that the sum allowed for inlet can be saved. The aqueduct is a very expensive work, and I doubt if it is necessary. There is no land above which specially requires draining, and I believe that the flood water can be more economically and as effectually passed across the canal by surplus sluices. The discharge allowed by Colonel Mullins for the aqueduct was 5,000 cubic feet a second, but the record of later floods shows more water has to be passed than he expected ; in extensive floods the whole of the country west of

the canal is a sheet of water, the banks breach in all directions, and the fall of the water to the east of the canal cannot be considerable; for this reason it is difficult to calculate what a surplus work would discharge, but the work I propose to construct is a set of surplus sluices similar to the old one, and taking the discharge of the old sluices (15 vents of 10 feet) as calculated by Colonel Mullins on the flood of 1879 at 6,555 cubic feet a second, the additional sluices should be, say, 10 vents of 10 feet, the vents would not be blocked and therefore there would be sufficient waterway for a larger discharge in heavier flood; I think these sluices might be built for 10 or 12,000 rupees and there would be a saving of nearly 30,000 rupees. The floor of the new work should be at the same level as that of the old sluices and the shutters of the same height."

These instructions have been modified as regards some of the details in Chief Engineer for Irrigation's No. C/A., dated 15th February 1890, in which he orders that—

"(*b*) There will be 10 bays of 9 feet spanned by arches with a rise of not more than 2 feet 3 inches and with the crown of the intrados at + 19·75, using the same datum as that of the plan above referred to which shows the F.S.L. as 16·17 and the flood level of 1882 as 19·88. Clear width between parapets to be 7 feet.

"(*c*) The sill of the work to be flush, without any step, and to be at 4 feet below F.S.L. and the shutter to be 4 feet 3 inches high.

"(*d*) The bottom of the gearing beams is to be high enough to allow the shutters to be lifted clear of the arches and therefore not lower than 19·75 + 4·25 + ·5 = + 24·5.

"(*e*) Length of holding-down bolts of beams to be not less than 6 feet and area of anchor plates not less than 2 square feet.

"(*f*) Screw shafts to be 2 inches diameter with square thread pitch 1 inch working through cast-iron screw boxes.

"(*g*) The shutters will be on the canal side of the work.

"(*h*) A fender pile foot-bridge to be placed in front of the work.

"3. The plan and estimate, &c., for the work should be submitted for regular sanction against the provision for the Nallamadu aqueduct."

In accordance with these instructions the estimate has been framed.

(Signed) J. E. PAUL,
Executive Engineer, Kistna Western Division.

9th October 1890.

No. 183 I.

The plans and estimates herewith are for completing the surplus arrangements required in the first and second furlongs of 29th mile of Commamur canal, Kistna Western delta, as laid down in para. 29 of inspection notes of the Chief Engineer for Irrigation with Proceedings of the Madras Government, No. 321 I., dated 21st March 1884, and in accordance with the instructions issued as stated in para. 20, clause (i) of inspection notes with Proceedings of the Madras Government, No. 193 I., dated 24th March 1890.

2. The estimate as received from the Superintending Engineer, VI Circle, was for Rs. 13,800, but certain alterations which have been made in the design and the provision of a fender pile foot-bridge in front of the existing as well as in front of the new sluices have raised the amount to Rs. 16,500 which is recommended for sanction. The amount can be met from the sanction for Rs. 40,690 for the Nallamadu aqueduct (item 976 of the statement with Proceedings of the Madras Government, No. 577 I., dated 1st October 1888), as that work will be superseded by the arrangements now proposed.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

2nd December 1890.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 8th December 1890, No. 728 I., Public Works.

The following estimate, amounting Rs. 16,500, for completing the surplus arrangements required in the first and second furlongs of 29th mile, Commamur canal, Kistna Western delta, is sanctioned, the funds required to meet the proposed outlay being met from the source indicated in para. 2 of the foregoing endorsement of the

Chief Engineer for Irrigation. The balance of Rs. 24,190 of the sanctioned provision for the Nallamadu aqueduct will be added to the amount available for unforeseen works of the Kistna delta system, which will then be raised to Rs. 1,97,684 :—

Major Works (Construction).
49. Irrigation.
Kistna Delta System.
Western Section.
I Works.
(2) Main Canals and Branches.
Commamur Canal.
F. River and Hill Torrent Works.

	RS.
New surplus sluices, Nallamadu, with fender pile foot-bridge in front of them and of existing sluices, estimate	16,500

2. This sanction has been registered as No. 104 I. of 1890-91.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, II Circle, with 14 enclosures.
„ Examiner, Public Works Accounts.
„ Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 8th.

Recd. *Encl.*

G.O., 8th Dec. 1890, No. 728 I.

DECEMBER.

Commamur Canal

Estimate of Rs. 16,500 for completing the surplus arrangements required in the first and second furlongs of 29th mile —, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper:—

From J. HANNAN, Esq., Superintending Engineer, II Circle, to the Chief Engineer for Irrigation (through the Examiner, Public Works Accounts), dated Bezváda, 29th October 1890, No. 1891 K.S.

I have the honor to forward, herewith, a completion report for the work "excavating Vadlamanad affluent," in the Kistna Eastern division, and to request that you will be good enough to obtain the sanction of Government to the excess of Rs. 84 over the revised estimate of Rs. 28,285, sanctioned in G.O., No. 282 I., dated 12th May 1888.

2. The excess is explained to be due to more earthwork having been found necessary in carrying out the work than allowed for in the estimate.

3. The excess, amounting to Rs. 84, may be met from the balance available for unforeseen works of the Kistna delta system.

Order—dated 8th December 1890, No. 729 I., Public Works.

The Examiner of Public Works Accounts is authorised to pass the expenditure incurred on the work "excavating Vadlamanad affluent," in the Kistna Eastern division, the excess outlay of Rs. 84 being met from the balance of the lump sum provision for unforeseen works of the Kistna delta system, which will then be reduced to Rs. 1,97,600.

2. This sanction has been registered as No. 105 I. of 1890-91.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle, with one enclosure.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 8th.

Recd. *Encl.*

G.O., 8th Dec. 1890, No. 729 I.

DECEMBER.

Vadlamanad affluent

Authorising the Examiner to pass the expenditure incurred in excavating the —.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From J. HANNAN, Esq., Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated Madras, 25th November 1890, No. 2115 K.S.

I have the honor to forward, herewith, an estimate, amounting to Rs. 1,670, for tools required in the Kistna Eastern division during 1890-91, and to request you will be good enough to obtain sanction of Government to the same under the head "42. Major Works (Working Expenses), III. Tools and Plant, 12. Miscellaneous," Kistna delta system.

2. All these articles have been included in the home indent for the current official year, submitted by the General Superintendent, Public Works Stores, Madras, for this division in the previous year.

ORDER—dated 8th December 1890, No. 730 I., Public Works.

The following estimate is sanctioned :—

Irrigation.
42. Major Works (Working Expenses).
Kistna Delta System.
Eastern Section.
III. Tools and Plant.
12. Miscellaneous.

	RS.
Tools required in the Kistna Eastern division during 1890-91, Estimate	1,670

2. This sanction has been registered as No. 106 I. of 1890-91.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle, with one enclosure.
" Examiner, Public Works Accounts.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

1 ated December, 8th.

Recd. *Encl.*

G.O., 8th Dec. 1890, No. 730 I.

DECEMBER.

Tools

Estimate of Rs. 1,670 for — required in the Kistna Eastern division, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—again the following paper :—

G.O., dated 17th November 1890, No. 661 I., Public Works.

Order—dated 8th December 1890, No. 731 I., Public Works.

The following letter will be sent to the Government of India.

(Here enter No. 732 I., dated 8th December 1890.)

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 8th.

Recd. *Encl.*

G.O., 8th Dec. 1890, No. 731 I.

DECEMBER.

Godavari Delta System

Ordered that the Government of India be informed that no tools and plant are required in connection with the — and requested to furnish more detailed instructions for preparing the completion report called for by it.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

LETTER—from

G. T. WALCH, ESQ.,
Joint Secretary to the Government of Madras,
Public Works Department,
Irrigation Branch,

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,
PUBLIC WORKS DEPARTMENT.

SIR,

With reference to your letter No. 174, of 22nd September 1890, I am directed to state that, as no further tools and plant are required in connection with the Godávari delta system, no general provision for them is necessary in the schedules submitted with my letter No. 429 I., dated 11th August 1890.

2. I am also directed to ask for more detailed instructions as to the character and scope of the "report" required, which in your letter under reply is called a "completion" report, though it is not so characterized in clause IV of the new rules regarding closure of estimates for Major works (Construction); and I am to say that "the financial" results attained and the general prospects of the project were given in paras. 8, 9 and 10 of the Note by the Chief Engineer for Irrigation printed with G.O., No. 428 I., dated 11th August 1890, with which was also printed "a statement comparing the actual expenditure by the main heads and sub-heads of the Capital account, with the estimate sanctioned by the Secretary of State."

3. I am to express regret that the Index map has not yet been furnished owing to delay on the part of the Superintending Engineer who should have prepared it; its submission shall be expedited as much as possible.

I have the honor to be,
Sir,
Your most obedient servant,

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

FORT ST. GEORGE,
8th December 1890.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Lated December, 8th.

I ecd. *Encl*

8th Dec. 1890, No. 732 I.

DECEMBER.

Godavari Delta System

Informing that no tools and plant are required in connection with the — and requesting to furnish more detailed instructions for preparing the completion report called for by it.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following papers :—

From the Superintending Engineer, II Circle, dated 22nd October 1890, No. 1829 K.S., with enclosures.

No. 182 I.

Note by the Chief Engineer for Irrigation.

The original estimate for this Pudivada bridge over the Répalle main drain, Kistna Western division, was Rs. 14,430 in March 1889, a revised estimate was submitted and sanctioned for Rs. 18,609, the work was finished in February 1890, and has cost Rs. 1,308 more than the revised estimate.

2. In Proceedings of Madras Government, No. 675 I., dated 19th November 1890, and No. 696 I., dated 27th November 1890, the frequency with which estimates are exceeded in the Kistna district has been commented on, and both these cases and this one belong to the Western division.

3. There can be no manner of doubt that a considerable portion of the excess has been due to want of proper executive management *that* changed so frequently during the prosecution of the work that it is impossible to fix the share of responsibility. The work was in hand 3¼ years, or spread over 3½ working seasons, when with proper management it could have been done in two. For the first season Mr. Pears was in charge of the division when the foundations only were put in, then Mr. Todd was in charge for two * seasons when the work ought certainly to have been finished off, but was not so, and after that all the work was finished off (February 1890) Mr. Paul held charge. Mr. Wood was the Sub-division officer during by far the greater part of the time that the work was in hand.

* From September 1887 to September 1889.

4. More attention is necessary on the part of the Superintending Engineer to those portions of his duty laid down in paras. 255 and 261 of the Code, especially that part of the latter which deals with examination of registers of works and watch over cost of works.

Chepâk,
27th November 1890.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

Order—dated 8th December 1890, No. 733 I., Public Works.

The Examiner of Public Works Accounts is authorized to pass the excess expenditure of Rs. 1,308 incurred on "constructing a bridge over the Répalle main drain at Pudivada (Kistna Western division)," the amount being met from the balance available for unforeseen works of the Kistna delta system, which will then be reduced to Rs. 1,96,292.

2. This sanction has been registered as No. 107 I. of 1890-91.

3. The attention of the Superintending Engineer will be given to the remarks of the Chief Engineer for Irrigation in his "note" above printed.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle, with two enclosures.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 8th.

Recd. *Encl.*

G.O., 8th Dec. 1890, No. 733 I.

DECEMBER.

Bridge

Authorizing the Examiner to pass the excess expenditure incurred in constructing a — over the Répalle main drain at Pudivada, Kistna Western division.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From Colonel W. H. BURTON, R.E., Superintending Engineer, V Circle, to the Chief Engineer for Irrigation, dated Chepâk, 1st December 1890, No. 4080.

With reference to your Circular Memorandum No. 28 G., dated 17th November last, requesting to submit on or before the 1st December 1890 all applications for modification of allotments for works in the Irrigation Branch for the current year, I have the honor to submit two applications—one for North Arcot and the other for South Arcot and Chingleput divisions.

ENCLOSURES.

NORTH ARCOT DIVISION, V CIRCLE.

STATEMENT showing the modification of allotment under 43. Minor Works and Navigation for 1890-91, as called for in Chief Engineer's Memorandum No. 28 G., dated 17th November 1890.

Division.	Item No.	Names of works.	Existing grant.	Modification applied for. Reduction.	Modification applied for. Increase.	Proposed grant.
			RS.	RS.	RS.	RS.
		PALAR ANICUT SYSTEM.				
		CAPITAL ACCOUNT.				
		Sakkiramallur Channel.				
	1	Compensation for land	500	270	..	230
	2	Improvements to head-sluice	500	..	49	549
	3	Constructing drop No. 1	..	..	80	80
	4	Do. do. „ 2	..	..	96	96
	5	Do. do. „ 3	..	..	140	140
	6	Do. do. „ 4	..	..	61	61
	7	Do. do. „ 5	..	..	115	115
	8	Do. do. „ 6 .. .. .. Do. do. „ 7 .. .. .. Do. do. „ 8	1,007	..	..	1,007
	9	Under-tunnel at 1,200 feet below Puntandalam tank ..	1,000	1,000	..	..
	10	Kilambadi syphon sluice	..	..	50	50
	11	Do. 3 bridges	1,700	766	..	934
	12	Do. sand sluice	..	..	160	160
	13	Cutting and embanking	1,380	..	510	1,890
	14	Puntandalam weir	180	..	..	180
	15	Sakkiramallur channel bridge No. 1 apron	..	..	6	6
	16	Valavanur spring channel banking	420	420	..	..

Statement showing the modification of allotment, &c.—*cont.*

Division.	Item No.	Names of works.	Existing grant.	Modification applied for. Reduction.	Modification applied for. Increase.	Proposed grant.
			RS.	RS.	RS.	RS.
		PALAR ANICUT SYSTEM—*cont.*				
		CAPITAL ACCOUNT—*cont.*				
		Sakkiramallur Tank.				
	17	Improvements to north weir	250	..	10	260
	18	Cutting and embanking north surplus channel ..	250	..	200	450
	19	Road dam	215	15	..	200
	20	Tunnel	1,070	120	..	950
		Esayanore Tank.				
	21	Esayanore small tank weir at south end	..	..	52	52
	22	Do. large tank weir at north end	630	630	..	..
	23	Do. weir at south end	..	..	33	33
	24	Cutting and embanking surplus channel in rear of tank weir	1,340	..	..	1,340
	25	Under-tunnel in surplus channel	700	700	..	..
		Natteri Tank.				
	26	Raising crest of calingulah	285	..	..	285
		Anantangal Branch Channel.				
	27	Constructing head-sluice	570	330	..	240
	28	Do. drop	380	130	..	250
	29	Deepening and widening	..	..	250	250
		Tennampattu Channel (Dusi).				
	30	Regulator at head	360	24	..	336
	31	Raising crest of drop weir No. 1	..	..	12	12
	32	Drops Nos. 2 and 3	900	..	..	900
	33	Do. „ 4 and 5	870	..	..	870
	34	Do. No. 6	700	..	..	700
	35	Cutting and embanking	8,330	3,330	..	5,000
		Mecheri Branch Channel.				
	36	Drop No. 1	..	..	150	150
	37	Do. „ 2	..	..	170	170
	38	Meleri branch channel sluice	..	..	25	25
	39	Arumbakam small tank branch channel sluice ..	190	90	..	100
	40	Random tank sluice	380	..	..	380
	41	Do. road tunnel	400	..	..	400
	42	Mecheri branch channel clearing silt	830	..	..	830
	43	Kuttanur branch channel sluice	..	..	25	25
	44	Paperi branch channel sluice	..	..	25	25
	45	Kadapantangal sluice	..	..	75	75
	46	Abvaditangi large tank sluice	..	..	110	110
	47	Do. Chittero sluice	..	..	70	70
	48	Vembakam tank sluice	..	..	70	70
	49	Mecheri channel sluice	..	..	24	24
	50	Paperi branch channel clearing silt	..	..	28	28
	51	Kadapantangal branch channel clearing silt ..	..	..	69	69
	52	Arumbakam branch channel clearing silt	..	..	100	100
		Govindanadi Channel.				
	53	Attepattu tank	..	..	254	254
		Kalavai Channel.				
	54	Regulator at head alteration to drop	..	..	385	385
	55	Cutting and embanking	1,300	900	..	400
		Kukundi Channel.				
	56	Division sluice	500	500	..	..
	57	Regulator in Kukundi tank	500	500	..	..
	58	Do. in Paperi tank	500	500	..	..
	59	Drops Nos. 1 and 2	600	600	..	..
	60	Do. „ 4 and 5	1,000	1,000	..	..
	61	Under-tunnel	300	300	..	..
	62	Cutting and embanking	6,742	..	8,721	15,463
		Total Capital ..	36,779	12,125	12,125	36,779

1st December 1890.

(Signed) W. H. BURTON, Colonel, R.E.,
Superintending Engineer, V Circle.

V CIRCLE.

STATEMENT of modification of allotments for works in the Irrigation Branch for 1890-91 as called for in Circular Memorandum No. 28 G., dated 17th November 1890, from the Chief Engineer for Irrigation.

Number.	Division.	Names of works.	Amount of estimate.	Outlay up to end of last official year.	Existing grant for 1890-91.	Amount surrendered.	Amount applied for.	Remarks.
		43. MINOR WORKS AND NAVIGATION.	RS.	RS.	RS.	RS.	RS.	
		WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT.						
		Revenue.						
		Extensions and Improvements.						
1	South Arcot Division.	Tirukoilúr Anicut system ..	..	..	3,000	..	500	
		Maintenance and Repairs.						
2	South Arcot Division.	Pelandorai anicut system ..	..	..	12,000	2,000	..	As it is difficult to obtain labor and contractors the sum cannot be spent.
		IRRIGATION WORKS FOR WHICH NEITHER CAPITAL NOR REVENUE ACCOUNTS ARE KEPT.						
		Major Works.						
3	South Arcot Division.	Vylamore tank improving ..	4,820	20	4,800	1,400	..	Two sluices in the tank cannot be built this year, hence surrender.
4	South Arcot Division.	Sengal Odai project	12,600	..	1,500	..	1,400	This sum also can be spent on the work.
		Minor New Works.						
	Chingleput.	Lump sum grant	..	..	25,000	10,000	..	
		Repairs.						
	Chingleput.	Lump sum grant	..	..	60,000	..	10,000	
5	South Arcot.	Do. do.	..	..	55,964	..	2,000	The additional sum asked for will be spent.
		Total ..	..	..	..	13,400	13,900	

1st December 1890.

(Signed) W. H. BURTON, Colonel, R.E.,
Superintending Engineer, V Circle.

ORDER—dated 9th December 1890, No. 734 I., Public Works.

The sum of Rs. 500 required for extensions and improvements to the Tirukoilúr anicut system under "Revenue Account," together with Rs. 115 for establishment charges, is appropriated from the balance of the reserve under the same head.

2. The proposed modifications of allotments for works of the Pálár anicut system in the North Arcot division under Capital Account as well as the following transfers are sanctioned:—

Provincial.

43. Minor Works and Navigation.

From

Irrigation and Navigation Works for which Capital and Revenue Accounts are kept.
Revenue Account.

	RS.
Pelandorai Anicut System—	
Maintenance and Repairs	2,000
Establishment	460
Total ...	2,460

To

Irrigation and Navigation for which neither Capital nor Revenue Accounts are kept.
South Arcot Division.

	RS.
Repairs	1,976
Establishment	454
Tools and plant	30
Total ...	2,460

From Irrigation and Navigation Works for which neither Capital nor Revenue Accounts are kept.		*To*	
South Arcot Division.	RS.		RS.
Vylamore tank improvements ...	1,400	Sengal Odai project	1,400
Chingleput Division.		Chingleput Division.	
Minor Original Works	10,000	Repairs	10,000
Total ...	13,860	Total ...	13,860

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
,, Superintending Engineer, V Circle.
,, Examiner, Public Works Accounts.
,, Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 9th.

Recd. *Encl.*

G.O., 9th Dec. 1890, No. 734 I.

DECEMBER.

Modifications of Allotments

Orders on application of Superintending Engineer, V Circle, for — in the North and South Arcot and Chingleput divisions.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper:—

Telegram from the Superintending Engineer, I Circle, to the Chief Engineer for Irrigation, dated Dowlaishweram, 1st December 1890, No. 138.

Your memo. 28 G., 17th ultimo. Ganjam requires additional funds under 43 not kept, repairs Rs. 4,000; repairs river embankments 1,000. Godávari Eastern surrenders 500, agricultural drainage repairs; requires additional 3,000 and 5,000 repairs, river embankments and river conservancy respectively. Application follows.

Order—dated 9th December 1890, No. 736 I., Public Works.

The sum of Rs. 4,000 required for repairs to Irrigation works in the Ganjam division under "Irrigation and Navigation works for which neither Capital nor Revenue accounts are kept" is appropriated from the balance of the reserve for Original works under the same head.

2. The sum of Rs. 1,000 required for repairs to river embankments in the same division is appropriated from the reserve under "Agricultual works," viz., Rs. 500 from the reserve under Original works and Rs. 500 from that under Repairs.

3. The grant of Rs. 500 for the Godávari Eastern division under "Agricultural works—Drainages—Repairs," surrendered by the Superintending Engineer, is reappropriated to meet in part the demand of Rs. 3,000 for this division under "Agricultural works—River Embankments"—"Repairs," Rs. 2,500, the balance of this demand, and Rs. 5,000 required for the same division under "River Conservancy"—"Repairs," making a total of Rs. 7,500, are appropriated by transfer from the reserve under "Irrigation and Navigation works—Works for which neither Capital nor Revenue accounts are kept"—"Repairs," Rs. 1,725 for establishment and Rs. 112 for tools and plant charges being also transferred from "Irrigation and Navigation works for which neither Capital nor Revenue accounts are kept" to "Agricultural works."

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 9th.

Recd. *Encl.*

G.O., 9th Dec. 1890, No. 736 I.

DECEMBER.

Funds

Appropriating — for certain works in the Ganjam and Godávari Central division.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following papers :—

From Major D. McNEIL CAMPBELL, R.E., Superintending Engineer, Periyár Project, to the Chief Engineer, Public Works Department, dated Periyár, 9th November 1890, No. 1985 P.R.

I have the honor to forward herewith reports from the Executive Engineers, No. I and No. II Periyár divisions, showing progress on the project works during the month of October 1890.

2. Satisfactory progress was made in No. I division as the weather was favorable till a few days towards the end of the month.

3. The wall mentioned in last report as being under construction was completed with great difficulty.

4. The building of the wall inside the front wall was continued.

5. A great deal of excavation was done on both sides of the river; on the right side what appears to be rock has been discovered, but it is irregular and peculiar in formation, and it is impossible to say for certain if it is solid rock or huge boulders. On the left, rock has not yet been found, and the stuff is chiefly decomposed rock, difficult to work with a pick, and on which blasting has not much effect.

6. Fitting up the machinery in the workshops is now making better progress and will probably be completed in six weeks or two months, by which time it is hoped water will be available to work the turbine.

7. Works at Thekady have progressed satisfactorily with the exception of the tunnel which was delayed owing to part of the turbine channel being destroyed by a landslip.

8. In No. II division work seems to have been much impeded by rain, but this was to be expected at this time of year.

ENCLOSURES.

REPORT of progress during October 1890.

With the exception of some heavy rain towards the end of the month, the weather on the whole was favorable for work. The total rainfall being 10·58 inches.

On the main dam large numbers of coolies and the Pioneers were employed in excavating the site all the way up to the hill on the left bank, and in the turbine channel and above it on the right. Rock has been reached on the right, but on the left flank masses of the decomposed rock still remains to be removed and the solid has not yet been exposed. The wall inside the front wall was proceeded with, girders were put under the centrifugal pump, and all the pile supports removed, so that the inside wall could be completed across. The pulsometer between the two rear walls was removed, and the space between the walls allowed to fill. A beginning was made of laying cement concrete in this space down a closed wooden shoot. It was hardly safe to go on working the pulsometer from the engine, and consequently the building of the inner wall has been delayed. The masonry in the continuation of the front wall was proceeded with under very great difficulties owing to the want of pumps and was completed up to 15 for a length of 40 feet on the 17th. A fresh up to 18·7 occurred on the 28th, but did no damage.

Work has been going on steadily on the right bank escape; two engines were brought here and were at work, driving two stone-crushers, each to supply the foundations of the dam.

Main Workshop.—Mr. Francis from the Public Works Workshops arrived on the 20th. The main shaft has been put in place on its standards and all the driving pullies keyed in their places. All the heavy machinery has been brought to Periyár, except one stone-crusher, one disintegrator and B tramway. The steam launch, boiler and engine complete has been brought over. Elephants have been very useful for this work. In Thekady sub-division the foundations of No. 2 lock weir were put in on the right flank for the wings and the body wall for a

length of 21 feet; excavation for the foundation of the left flank was completed. Work has been stopped here since the 25th on account of rain and freshes.

Wire Tramway.—All posts and stations completed except C and the bottom terminal. The rope was spliced at A and is being spliced at C. The rope is up on both sides on all the posts.

Water-shed cutting.—All the silt brought in by the floods of July has been cleared. Pumps are required here before further material progress can be made.

Tunnel.—Only 14 feet was done during the month at the north end. Total length to end of month 792 feet. There were only four days of work done. This was owing to a landslip which carried away some of the trough. The opportunity of an enforced stoppage was taken to put the whole channel into good order, and new and more substantive troughing in the upper end. New troughing on the lower end was in progress, as well as the new cut which will obviate the recurrence of delay from slips. The raising of the reservoir dam was completed, and the protective bank along the Peermaad road commenced. At the south end, the circular tunnels met on the 7″ and the chamber at their junction 12′ × 10′ blown out. The main tunnel at this end is 91 feet in, 8 feet having been taken out this month.

The health among the coolies has been fairly good, but the difficulties caused by repeated absences from illness of members of the office establishment still continues, though there was an improvement upon last month.

PERIYAR,
6th November 1890.

(Signed) H. S. TAYLOR,
Executive Engineer, No. I Periyár Division.

PROGRESS REPORT on works in No. II Periyár Division for October 1890.

During the month the works in the *1st Reach*, with the exception of Ramarajapuram surplus sluice, have not made satisfactory progress. The earthwork contractor, M. Vencatasawmi Naidu, has not had enough labor and has left the rock-blasting alone during the month. The head-sluice and scouring-sluices were progressing slowly, but the earth centring had been completed by the 25th. The arch-stone to one arch of the head-sluice had been turned and three more were nearly completed when the very heavy rain of the 26th-27th caused a breach in the ring-bund and of course the earth centrings have been washed away. Mr. Ellis reports, however, that beyond the cost of putting up a fresh ring-bund no damage has been caused. The ring-bund will of course be got up without delay, but the river has been till now (3rd instant) in heavy flood and of course it will be impossible to do this till it subsides.

The *Culvert half mile* is complete except the removal of some 60 feet of centring.

In the *2nd Reach* a little earthwork is in progress closing gaps. The *first culvert* has been completed; the others are still progressing slowly. I have ordered in both these reaches, places where the soil is light, to be planted with grass. It is found better than turfing and much cheaper.

In the *3rd Reach* the seven masonry cross drainage works have been pushed on very rapidly, but I am afraid the very heavy rain at the end of the month will delay us considerably by damaging the earth centres of those where the arch has not been turned. It is certainly a great disadvantage with this kind of centring.

In the *4th Reach* progress is very slow and the work is lagging. The sub-division officer certainly could bestir himself a little more.

On the 27th the heavy rain brought the Sattyar down in fresh, the foundation pit was flooded, and the lift wall for the picottas broken down. The work will have to be stopped for a season until the worst of the downpour is over.

I had by the Chief Engineer's orders written to the President of the Municipality offering Rs. 1,000 for their engine, but can get no reply. It will be the cheapest in the long run.

The *Rest-house at Mettupatty* is finished, but too damp to go into.

None of the land required for the *4th Branch Channel* has yet been handed over, and we are in a similar plight as regards the *6th Reach*. Both have been promised this month.

The *2nd Branch Channel* will soon be completed, but the masonry works of the third are behind.

There has been no sickness, but the rainfall extremely heavy, which has to some measure stopped work. About 12 inches are registered during the month both at Melúr and Madura.

MADURA,
4th November 1890.

(Signed) G. P. CARLESS,
Executive Engineer, No. II Periyár Division

Note by the Chief Engineer, Public Works Department.

Submitted for the information of Government.

2. The progress in No. I division is satisfactory on the whole, though the delay in the tunnelling work is annoying. The progress on the wire tramway, which has been very backward, is good, and creditable to Mr. Keeling, the Sub-divisional officer in charge.

3. In separate reports complaints have been made of difficulties from insufficient pumping power, but it is not clear whether these were felt before or after the arrival of the extra machinery sanctioned in G.Os., No. 460 I. of 25th August, and No. 513 I. of 15th September 1890.

4. In the former of these orders the purchase of two portable engines, and in the latter the purchase of three boilers for supplying pulsometers and a third pulsometer, in addition to the two previously in use, was sanctioned; the Superintending Engineer should report whether these articles have been received, and if not, when they are expected, and what steps have been taken to expedite their supply.

5. It is not quite clear from the report whether the inner walls in front and rear of the main dam have actually been completed, and if not, to what stage they have been brought. The Superintending Engineer should submit a special report upon the subject at an early date.

6. The progress in No. II division is not as good as could be wished, and it is specially to be regretted that the purchase of the engine belonging to the Madura Municipality has not yet been completed. This engine was inspected by the undersigned early in the month, and the Superintending Engineer instructed to enter into negotiations for its purchase. It is suggested that the Chairman be called upon in the Local and Municipal Department to state definitely whether the Municipality is prepared to sell the engine, and at what price.

7. It is understood that the difficulty with regard to the transfer of land is now greatly reduced, but the subject might receive attention in the Revenue Department.

(Signed) J. PENNYCUICK, Colonel, R.E.,
Chief Engineer, P.W.D.

19th November 1890.

ORDER—dated 9th December 1890, No. 737 I., Public Works.

Recorded.

2. The attention of the Superintending Engineer is drawn to the remarks in the Chief Engineer's note, and he will report on the subject of paras. 4 and 5.

3. The inquiry suggested in para. 6 will be made in the Local and Municipal Department, and the Collector will be requested in the Revenue Department to expedite as much as possible the transfer of the land required for the main and bank channels.

4. The report will be forwarded to the Government of India in continuation of endorsement No. 602 I., dated 23rd October 1890.

(Here enter No. 738 I., dated 9th December 1890.)

(True Extract.)

(Signed) J. PENNYCUICK, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintendent of Works, No. I Division, Periyár Project.
" Superintending Engineer, VI Circle.
" Chief Engineer for Irrigation.
" Revenue Department.
" Local and Municipal Department.

ENDORSEMENT—dated 9th December 1890, No. 738 I., Public Works.

Forwarded.

(By Order.)

(Signed) J. PENNYCUICK, Colonel, R.E.,
Secretary to Govt., P.W.D.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 9th.

Recd. *Encl.*

G.O., 9th Dec. 1890, Nos. 737 I., 738 I.

DECEMBER.

Periyar Project Works

Forwarding the progress report of the — for October 1890.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper:—

From Lieut.-Colonel A. C. SMITH, R.E., Superintending Engineer, VI Circle, to the Chief Engineer for Irrigation, dated Trichinopoly, 22nd November 1890, No. 788 T.N.

I have the honor to submit, for your approval and sanction of Government, the accompanying revised estimate amounting to Rs. 3,350 and comparative statement for improving the Korampallam tank, Tinnevelly district.

2. The estimate is in lieu of that for Rs. 2,740 sanctioned in G.O., No. 380 I., dated 12th August 1889.

3. The cause of excess, viz., Rs 610, over the original sanctioned estimate is due to the omission of earthwork for filling up gullies and hollows at the top of the bank, insufficient height of revetment between 21 and 21½ mile-stones and to the inadequate rate for roughstone provided for in the original estimate.

4. The rates entered are fair, and I request that the estimate may be sanctioned as soon as possible.

5. I request also that the excess of Rs. 610 over the original estimate be allotted in order that the work may be completed and its accounts closed.

Order—dated 10th December 1890, No. 740 I., Public Works.

The following revised estimate, amounting to Rs. 3,350, is sanctioned in supersession of the estimate of Rs. 2,740 sanctioned in G.O., No. 380 I., dated 12th August 1889:—

Irrigation.
42. Major Works (Working Expenses).
Srívaikuntham Anicut System.
Extensions and Improvements.
(2) Main Canals and Branches.
N. Tanks and Reservoirs.

	RS.
Improving the Korampallam tank, estimate	3,350

2. This sanction has been registered as No. 108 I. of 1890-91.

3. The demand of Rs. 610 for completing this work is provided by reappropriation from the existing grant of Rs. 3,000 for this system under "Minor extensions and improvements" against which the expenditure to the end of October amounted to only Rs. 1,208.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, VI Circle, with eight enclosures.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 10th.

Recd. *Encl.*

G.O., 10th Dec. 1890, No. 740 I.

DECEMBER.

Korampallam Tank

Estimate of Rs. 3,350 for improving the — of the Srívaikuntham anicut system, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper : —

From Colonel H. SMALLEY, R.E., Superintending Engineer, III Circle, to the Chief Engineer for Irrigation, dated Bellary, 5th December 1890, No. 2609.

In continuation of this office No. 2608, dated 4th December 1890, I have the honor to request that you will be good enough to obtain sanction for the following transfer in the Kurnool division, viz., Rs. 4,000, from Tank Restoration Scheme *Original work* to *Repairs* required to carry on Tank Restoration repairs.

ORDER—dated 12th December 1890, No. 744 I., Public Works.

The transfer of funds proposed by the Superintending Engineer is sanctioned.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, III Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 12th.

Recd. *Encl.*

G.O., 12th Dec. 1890, No. 744 I.

DECEMBER.

Transfer of Funds

Sanctioning certain —.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following papers :—

G.O., dated 7th March 1890, No. 1581, Revenue.

Read—the following Proceedings of the Board of Revenue (Land Revenue), dated 23rd January 1890, Mis. No. 429, on endorsement of the Collector of Salem, dated 28th December 1889, No. 1131-Petition.

Resolution—dated 23rd January 1890, Mis. No. 429.

Submitted to Government with one 2-rupees Court Fee stamp on petition. The cost of restoring the anicut and the size of the ayacut under it prevent the work being undertaken from the Minor Irrigation Works grant.

Order—dated 7th March 1890, No. 1581, Revenue.

The paper read above will be transferred to the Public Works Department for consideration as it appears from the Executive Engineer's letter referred to in the Collector's endorsement that the question of restoring the Appanasamudram anicut is about to be submitted for orders in that department.

(True Extract.)

(Signed) C. A. GALTON,
Secretary to Government.

No. 1430 C.

Forwarded to the Superintending Engineer, IV Circle, with a request that his proposals for classing the work in question as Imperial, and for repairing it with or without a contribution from the interested ryots, may be submitted at an early date.

(Signed) H. E. CLERK,
Under-Secy. to Govt., P.W.D.,
Irrigation Branch.

15th March 1890.

From Lieut.-Colonel R. R. E. DRAKE-BROCKMAN, R.E., Superintending Engineer, IV Circle, to the Chief Engineer for Irrigation, dated Coimbatore, 22nd September 1890, No. 92 E.I.

With reference to your No. 1430 C. of 15th March 1890, I have the honor to submit plans and estimate, amounting to Rs. 4,400, for restoring the Appanasamudram anicut across the Vellar or Vasistanadi river in the Atúr taluk, Salem district.

2. I consider that the anicut should be treated as an Imperial Irrigation work, as it irrigates more than 200 acres, and as some of the works drawing their supply

from the same river and having less than 200 acres under them, have been included in the Imperial list—*vide* printed detailed list prepared in accordance with G.O., No. 284 I. of 5th May 1880.

3. The work if carried out will prove remunerative provided the interested ryots keep up to their promise of contributing Rs. 1,000 towards the cost of work. They have since given a muchilika to the Collector agreeing to pay the amount within two months. Until this is paid the work will not be put in hand—*vide* Collector's letter herewith.

4. By restoring the anicut it is anticipated by the Revenue Department that there would be an additional revenue of Rs. 192-10-0 by new lands being brought under wet cultivation. To this it must be added the average cost of past four years in putting up a temporary dam and repairing the channel, viz., Rs. 70. Then the anticipated yearly revenue would be Rs. (192-10-0 + 70) = 262-10-0. This would yield on the proposed outlay by Government (4,180—1,000 contribution by ryots) Rs. 3,180, a return of 8·25 per cent., which is considered sufficiently remunerative.

5. The papers which accompanied your memorandum under reference are herewith returned.

Enclosure.

Report to accompany plans and estimate, amounting to Rs. 4,400, for restoring the Appanasamudram Anicut.

This anicut is situated in the Atúr taluk about 3 miles to the west of cusbah station and a mile to the north of the 28th mile-stone on Salem and Cudalore road. This is classed as a minor work, although the ayacut under this as well as the tank which it feeds and which is in a ruined state is more than 200 acres. It is built across Vasistanady river, being the seventh in the series, and was originally constructed of large dry stones, had no body wall and the crest not at one uniform level. The extraordinary freshes that came down the river some years ago had entirely carried it away.

2. During March 1880 it was reconstructed partly for a length of 40 feet from right end; the work was then stopped and handed over to Revenue Department to be completed by them; since then the anicut is left in an incomplete state, and the ryots take water with great difficulty by putting ring-bunds, &c.

3. The river at the site measures 255 feet from bank to bank, and the wing wall on the right bank together with the anicut for 40 feet is completed. The remaining 215 feet has to be closed by extending the anicut, and for which the present estimate is submitted.

4. The anicut has a channel about 3 miles in length and directly irrigates lands to the extent of 180 acres and 60 acres by Thennangudipoliem tank, into which it ultimately empties itself.

5. Thennangudipoliem tank is a small tank breached in six places during the cyclone of November 1880, and since then left in disrepair. The ayacut under the tank being small, and as it can be very well irrigated by the channel, there seems to be no necessity to restore the tank if the anicut is reconstructed.

C=675.

6. The river at the site drains about 360 square miles and is capable of discharging 34,162 cubic feet per second.

7. It is now proposed to extend the anicut on the same plan as the existing portion, taking the foundations down to hard soil, which has been ascertained and can be reached at the depths shown in sections; the crest will be brought up to a uniform level 40·00.

8. The wing wall on the left bank will be built of a not less average thickness than one-fourth of the height which for 15 feet will be $3\frac{3}{4}$ feet and for 11 feet $2\frac{3}{4}$ feet, but as the existing wing wall on the right bank is too slight in section for the proposed height to which it is to be raised, it will be strengthened by backing up the old wing as shown in red on the sections of the anicut plan.

9. The body wall being required only to prevent water passing through the sub-soil and the strength of the anicut depending mostly upon the heavy apron behind it, the body wall will be made of a uniform section of 3 feet in thickness, similarly the retaining wall will be uniformly 2 feet thick.

10. The largest and for their form best proportioned stones should be selected for building into the upper 3 feet of the body and retaining walls so as to guard against displacement by the rush of the flood water.

11. The discharge from the drainage of the catchment basin would be passed off at a head of 11 feet which is $2\frac{1}{3}$ feet more than the highest known flood; but, however, provision has been made and wing walls sufficiently raised to meet this calculated discharge.

12. The channel is taken from the north bank of the river and commands as already stated an ayacut of 180 acres. The channel is in fair condition and needs no repair, the silt being cleared by the ryots.

13. The whole work will be carried out as per instructions contained in the standard specification.

(Signed) R. R. E. DRAKE-BROCKMAN, Lieut.-Col., R.E.,
Superintending Engineer, IV Circle.

22nd September 1890.

No. 186 I.

Submitted to Government. The amount of the estimate for restoring the Appanasamudram anicut has been raised in this office from Rs. 4,180 to Rs. 4,400.

Chepák,
5th December 1890.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

Order—dated 13th December 1890, No. 748 I., Public Works.

The following estimate is sanctioned :—

Irrigation.
43. Minor Works and Navigation.
Irrigation and Navigation.
Works for which neither Capital nor Revenue Accounts are kept.
Original Works.
Salem District.

	RS.
Restoring the Appanasamudram anicut across the Vasistanadi, estimate	4,400

2. This sanction has been registered as No. 109 I. of 1890-91.

3. The proposal made by the Superintending Engineer, IV Circle, to include the Appanasamudram anicut in the list of "Imperial" works in the Salem district is sanctioned.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, IV Circle, with 28 enclosures.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 13th.

Recd. *Encl.*

G.O., 13th Dec. 1890, No. 748 I.

DECEMBER.

Appanasamudram. Anicut, Salem District

Estimate of Rs. 4,400 for restoring the —, sanctioned with remarks.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following papers :—

No. 1026 T.J.

Report by the Superintending Engineer, VI Circle, on the estimate of Rs. 11,750 for improving the both banks of Moodicondanar from road No. 5 to road No. 15.

From its head at the bridge on road No. 5 up to road No. 15 the banks of the Moodicondanar are in very bad order. In 1889 water topped the left bank in several places, causing a large breach at mile 53/2, which was closed at a cost of nearly Rs. 1,000. The whole padugay was cut away although the flood was an ordinary one. A high flood will result in a great deal of damage, and it is therefore necessary that the banks should be improved.

2. From the head up to just below the 55th mile-stone the left bank is in charge of the Public Works Department, and in this portion two diversions are allowed for, as shown on the survey accompanying. As the river runs too close to the bank at sections 5, 10 and 18, it is proposed to divert its course as shown in dotted lines, and for which an estimate, under the head River Conservancy, Original Works, is expected from the Executive Engineer, Tanjore division.

3. As the left bank below 55th mile-stone up to 56th for a distance of 4,600 feet runs into Tanjore Palace estate land and is in charge of the Receiver, no provision has been made in the estimate for its improvement, but the Collector has been requested in this office No. 591 T.J. of 20th June 1890, forwarding the estimate for his counter-signature, to arrange with the Receiver of the Palace estate to take necessary steps to improve the bank in this portion.

4. Below this point, again the old line of the bank is followed throughout up to road No. 15.

5. From the head up to 55 miles 3 furlongs there is no right bank, and it is not required. Below this the present line is followed throughout.

6. The banks will be raised to 3 feet above M.F.L. with a top width of 6 feet and slopes $1\frac{1}{2}$ to 1.

7. Between cross sections 72 and 82 the right bank is to have a top width of 10 feet as it is occasionally used as a bandy track. There is no contribution from the Local Fund Department for this portion; the entire cost will be little and the width is recommended.

8. Provision has been made in the estimate for compensation for land and earth and for clearing jungle.

9. The rates entered are fair and the estimate is recommended for sanction.

(Signed) A. C. SMITH, Lt.-Col., R.E.,
Superintending Engineer, VI Circle.

20th August 1890.

Memorandum to the Superintending Engineer, VI Circle, dated 2nd September 1890, No. 55 T.J.

From Lieut.-Colonel A. C. SMITH, R.E., Superintending Engineer, VI Circle, to the Chief Engineer for Irrigation, dated Trichinopoly, 15th November 1890, No. 1622 T.J.

I have the honor to resubmit the estimate of Rs. 11,750 for improving the both banks of Moodicondanar returned with your memorandum No. VI/55 T.J., dated 2nd September 1890.

2. The diversions of the river shown on the tracing plan have been cancelled, but the line of bank proposed and as shown thereon will be followed throughout except at cross sections 15 and 18, when it would be advantageous to move it back 4 to 6 feet for a length of 125 to 150 feet. This is shown in the sections, but it does not involve any alteration being made in the estimate, for the ground is level.

3. An estimate, amounting to Rs. 680, for the repair of masonry works on the banks of the river is also herewith submitted under the head Maintenance and Repairs, Special. There are eight sluices in both banks of the river, and all fall in the line of the banks as they are at present, and consequently no alterations are required. The estimate will be sanctioned by me on being approved by you.

4. I request that the estimate for the improvements of the banks may be sanctioned as soon as possible, as the work is said to be urgent.

No. 185 I.

Submitted to Government with a recommendation that the estimate of Rs. 11,800 be sanctioned.

2. The estimate of Rs. 680 for repairing the masonry works on the banks of the Moodicondanar has been returned to the Superintending Engineer duly approved.

CHEPÂK,
5th December 1890.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 13th December 1890, No. 749 I., Public Works.

The following estimate is sanctioned :—

Irrigation.
43. Minor Works and Navigation.
Agricultural Works.
River Embankments.
Original Works.
Tanjore Division.

	RS.
Improving both banks of the Moodicondanar, estimate	11,800

2. This sanction has been registered as No. 116 I. of 1890-91.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, VI Circle, with 8 enclosures.
" Examiner, Public Works Accounts.
" Revenue Department.
" Editors' Table.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 13th.

Recd. *Encl.*

G.O., 13th Dec. 1890, No. 749 I.

DECEMBER.

Moodicondanar River, Tanjore Division

Estimate of Rs. 11,800 for improving both banks of the —, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper:—

From G. B. LAMBERT, Esq., Executive Engineer, Coimbatore Division, to the Superintending Engineer, IV Circle, dated Coimbatore, 14th November 1890, No. 5372.

With reference to your endorsement No. 838 C.I., dated 12th October 1890, I have the honor to report that, on my inspection at Barúr during last month, I find that all the works will be completed by the end of March 1891, excepting new head to Agaram channel and gap in the anicut, as the former will be under water up to end of December 1890, and only Rs. 600 can be spent before 31st March 1891.

2. In these circumstances, the additional grant now required for expenditure during the current official year is Rs. 3,836 as per statement herewith submitted, and not Rs. 6,419 as per statement submitted with my letter No. 4478, dated 22nd September 1890.

ENCLOSURE.

IV CIRCLE– COIMBATORE DIVISION.

STATEMENT showing the modification of allotments of Barúr Project Works for 1890-91.

Item No.	Main and sub heads.	Name of work.	Amount of estimate.	Expenditure up to 31st March 1890.	Balance of estimate.	Grant for 1890-91.	Outlay up to 31st October 1890.	Grant applied for. Increase.	Grant applied for. Decrease.	Proposed grant.	Remarks.
1	2	3	4	5	6	7	8	9	10	11	12
			RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	
1	I-A.	Amount required for surveying and levelling.	400	315	85	25	4	..	..	25	
2	I-B.	Compensation for lands for Barúr project works	10,774	10,060	714	294	27	420	..	714	
3	I-B.	Payment for land taken up for Barúr project.	182	..	182	182	..	..	..	182	
4	I-C.	Anicut across Ponniár at Nedungal ..	21,262	21,103	159	162	43	..	119	43	The gap in the anicut cannot be closed till the new head to Agaram channel is completed.
5	I-O.	Hospital contingencies	530	510	20	20	10	..	10	10	
6	II-L.	New head to Agaram channel	5,710	3,178	2,532	100	92	500	..	600	As the channel will be under water up to end of December 1890, more than Rs. 600 cannot be spent this year.
7	II-F (1).	Constructing 6 inlets to Barúr tank supply channel.	957	615	342	100	29	..	71	29	The remaining inlets are unnecessary.
8	II-L.	Cutting Barúr tank supply channel ..	75,492	75,036	456	200	79	..	109	91	Completed accounts will be closed.
9	III-C.	Constructing 35 outlets and 6 terminals ..	14,636	11,515	3,121	160	44	..	..	160	
10	Do.	Do. 60 distribution sluices ..	7,025	3,523	3,502	586	612	2,916	..	3,502	Required to complete the works.
11	Do.	Do. 19 masonry falls	2,690	1,451	1,239	640	..	599	..	1,239	Do. do.
12	III-L.	Cutting Keelcooppam East Main channel ..	27,600	26,275	1,325	1,325	544	..	..	1,325	Do. do.
13	Do.	Do. do. branch channel No. 1.	3,372	3,453	— 81	70	132	62	..	132	Do. do.
14	Do.	Do. do. do. No. 2.	5,910	4,563	1,347	1,347	1,327	..	..	1,347	Do. do.
15	Do.	Do. do. do. No. 3.	10,700	9,580	1,120	1,120	506	..	..	1,120	Do. do.
16	III-C.	Constructing an aqueduct at Barúr tank project to carry a jungle stream over the East Main channel at 3rd mile $3\frac{1}{2}$ furlongs.	1,930	578	1,352	1,352	668	..	352	1,000	The balance will be a saving on the estimate.
17	III C.	Constructing an accommodation bridge on the East Main channel at 0 mile $5\frac{1}{2}$ furlongs to carry a road from Keelcooppam to Trunk road.	560	272	288	288	235	..	..	288	
18	III-C.	Opening a sluice vent in outlet No. 7 of East Main channel and cutting distributary channels.	159	1	158	158	109	..	..	158	
		Total ..	..	..	..	8,129	4,461	4,497	661	11,965	

12th November 1890.

(Signed) G. B. LAMBERT,
Executive Engineer.

No. 111-E.I.

Submitted to the Chief Engineer for Irrigation with reference to his memo. No. IV/22 S.L. of 7th October 1890, with a request that he will be good enough to obtain sanction to an additional allotment of Rs. 3,836, as shown in the accompanying statement.

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Superintending Engineer, IV Circle.

COIMBATORE,
17th November 1890.

No. 184 I.

Submitted to Government.

2. Including establishment charges the amount required will be Rs. 4,662. As the existing sanction for the Barúr tank project will expire with the current official year, it is necessary that all the works of the project should be completed this year and the additional grant required for the purpose should be provided. The amount required may be appropriated from the sum reserved in G.O., No. 581 I., dated 16th October 1890.

CHEPÂK,
6th December 1890.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 13th December 1890, No. 750 I., Public Works.

The modifications of allotments for works of the Barúr tank project as proposed by the Superintending Engineer, IV Circle, as well as the following transfer of funds, are sanctioned :—

Imperial.
49. Major Works (Construction).

From	RS.	*To*	RS.
Godávari Delta Reserve—		Barúr Tank Project—	
Tools and plant	4,622	Works	3,836
		Establishment	786
Total ...	4,622	Total ...	4,622

2. Ordered that a copy of these Proceedings be forwarded to the Government of India for information.

(Here enter No. $\frac{750}{A}$ I., dated 13th December 1890.)

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, I Circle.
„ „ „ IV „
„ Examiner, Public Works Accounts.
„ Revenue Department.

ENDORSEMENT—dated 13th December 1890, No. $\frac{750}{A}$ I., Public Works.

Forwarded.

(By Order.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 13th.

Recd. *Encl.*

G.O., 13th Dec. 1890, Nos. 750, 750 A I.

DECEMBER.

Transfer of Funds

Forwarding copy of Proceedings sanctioning certain — for works of the Barúr tank project.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

No. 187 I.

Note by the Chief Engineer for Irrigation.

The Superintending Engineer, III Circle, applied for the following additional grants for the Kurnool-Cuddapah canal :—

42. Major Works (Working Expenses.)

	RS.
(1) Maintenance and Repairs	18,100
(2) Tools and Plant	815

2. The existing grant for the canal is contrasted below with the expenditure incurred to the end of October :—

—	Grant.	Expenditure.
	RS.	RS.
Extensions and Improvements	5,000	11,280
Maintenance and Repairs	74,037	74,721
Establishment	23,778	23,046
Tools and Plant	7,185	8,360
Total ...	1,10,000	1,17,407

3. In the application for an additional grant submitted to the Government of India with Proceedings of Madras Government, No. 624 I., dated 4th November 1890, Rs. 18,000 were included for this canal as shown below :—

	RS.
Extensions and Improvements	14,634
Establishment	3,366
Total ...	18,000

The Government of India has not yet sanctioned the above additional grant. If the amount be sanctioned, it will be sufficient to cover the excess expenditure already incurred and the further expenditure contemplated on the works still to be carried out this year under Extensions and improvements.

4. The grants under both "Maintenance and Repairs" and "Tools and plant" have also been exceeded. The existing grants are insufficient to admit of a proper upkeep of the canal and its works, on account, chiefly, of the extensive repairs required to be carried out this year to the Sunkesala, Jutur, Rajole and Pennér anicuts, but

the Executive Engineer of the division should have applied for the necessary funds in proper time and should not have incurred, as reported by the Superintending Engineer, extensive liabilities without regular approval, sanction and provision of funds. It is suggested that the Government of India be requested to sanction by wire a further additional grant of Rs. 20,000, which is urgently required for this canal as shown below :—

	RS.
Maintenance and Repairs	15,000
Establishment	3,450
Tools and Plant	1,550
Total ...	20,000

CHEPÂK,
10th December 1890.

(Signed) H. E. CLERK,
for Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 13th December 1890, No. 751 I., Public Works.

The proposal of the Chief Engineer for Irrigation to apply to the Government of India for a further additional grant of Rs. 20,000 is approved. The following deferred telegram will be sent to the Government of India :—

"Besides one lakh applied for in my letter 624 I., 4th ultimo, further additional grant, Rs. 20,000, urgently required under 42, extensive repairs to anicuts of Kurnool canal being found necessary. Please wire sanction."

2. The following letter will be sent to the Government of India.

(Here enter No. 752 I. dated 13th December 1890.)

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, III Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 13*th*.

Recd. *Encl.*

G.O., 13th Dec. 1890, No. 751 I.

DECEMBER.

Funds

Ordered that the Government of India be requested to sanction an additional grant of Rs. 20,000 under 42. Major Works.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Letter—from

G. T. WALCH, Esq.,
Joint Secretary to the Government of Madras,
Public Works Department,
Irrigation Branch,

To

The SECRETARY to the GOVERNMENT of INDIA,
Public Works Department.

Sir,

In continuation of my telegram of today applying for a further additional grant of Rs. 20,000 under 42. Major Works (Working Expenses) in addition to the one lakh applied for in my letter No. 624 I., dated 4th November 1890, I am directed to forward, herewith, a copy of Proceedings of Madras Government, No. 751 I., dated 13th December 1890, and to request that the Government of India will be pleased to sanction the additional grant now applied for, as it is considered necessary that the repairs required to the anicuts of the Kurnool-Cuddapah canal should not be stopped.

I have the honor to be,
Sir,
Your most obedient servant,

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

Fort St. George,
13th December 1890.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 13th.

Recd. *Encl.*

13th Dec. 1890, No. 752 I.

DECEMBER.

Funds

Requesting an additional grant of Rs. 20,000 under 42. Major Works.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT

Irrigation.
Account.

READ—the following papers :—

From Lieut.-Colonel A. C. SMITH, R.E., Superintending Engineer, VI Circle, to the Chief Engineer for Irrigation, dated Trichinopoly, 29th November 1890, No. 1685 T.J.

I have the honor to request that the following modification of allotments may be sanctioned at an early date :—

Item No.	—	Existing grant.	Modification of allotment applied for.		Modification of allotment proposed.	
			Reduction.	Increase.	Reduction.	Increase.
		RS.	RS.	RS.	RS.	RS.
	42. MAJOR WORKS (WORKING EXPENSES).					
	EXTENSIONS AND IMPROVEMENTS, MINOR					
1	Lump sum grant (Tanjore division)	12,559	..	441	..	441
2	Do. (Negapatam do.)	9,002	..	1,000	..	1,000
	Total ..	..	..	1,441	..	1,441
	43. MINOR WORKS AND NAVIGATION.					
	WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT.					
	REVENUE ACCOUNT.					
	Lower Coleroon Anicut System.					
3	Minor extensions and improvements (Tanjore division)	1,700	..	1,300	..	1,300
4	Maintenance and repairs (Tanjore division) ..	2,900	1,000	..	1,000	..
	Maradur Anicut System.					
5	Maintenance and repairs (Tinnevelly division) ..	9,000	..	1,000	..	1,000
	Total ..	..	1,000	2,300	1,000	2,300
	WORKS FOR WHICH NEITHER CAPITAL NOR REVENUE ACCOUNTS ARE KEPT.					
	ORIGINAL WORKS, MAJOR.					
	Tinnevelly division.					
6	Vasudevanallur Periyakulam tank—Improving the. Estimate Rs. 11,600, sanctioned in G.O., No. 497 I., dated 9th September 1890 ..	8,000	..	1,900	..	1,900
7	Marankulam and Papankulam tank—Improving the. Estimate Rs. 5,460, sanctioned in G.O., No. 206 I., dated 28th March 1890	3,460	280	..	280	..
8	Pavur tank and channel—Improving the. Estimate Rs. 18 865, sanctioned in G.O., No. 134 I., dated 10th February 1885, and No. 423 I., dated 5th September 1889	2,650	300	..	300	..
9	Kakanellore channel—Improving the. Estimate Rs. 17,205, sanctioned in G.O., No. 465 I., dated 19th May 1885	1,000	100	..	100	..

Item No.	—	Existing grant.	Modification of allotment applied for. Reduction.	Modification of allotment applied for. Increase.	Modification of allotment proposed. Reduction.	Modification of allotment proposed. Increase.
		RS.	RS.	RS.	RS.	RS.
	43. MINOR WORKS AND NAVIGATION—*cont.*					
	WORKS FOR WHICH NEITHER CAPITAL NOR REVENUE ACCOUNTS ARE KEPT—*cont.*					
	ORIGINAL WORKS, MAJOR—*cont.*					
	Madura division.					
10	Tenkarai channel and tank—Improvements. Estimate Rs. 21,400, sanctioned in G.O., No. 307 I., dated 27th June 1889	12,504	2,000	..	2,000	..
11	Minor original works (lump sum grant) ..	3,000	..	2,000	..	2,000
	Tanjore division.					
12	Minor original works (lump sum grant) ..	1,300	..	2,000	..	2,000
13	Repairs (lump sum grant)	1,100	800	..	800	..
	Total ..	..	3,480	5,900	3,480	5,900
	TANK RESTORATION WORKS.					
	ORIGINAL WORKS, MAJOR.					
	Madura division.					
14	Anthur anicut channel and 4 tanks depending on it. Improving the. Estimate Rs. 23,188, sanctioned in G.O., No. 423 I., dated 19th July 1888	8,338	1,200	..	1,200	..
15	No. 4 Thumbakulam tank and channel—Constructing two surplus weirs, sluices No. 2, &c. Estimate Rs. 5,460, sanctioned in Register No. 276 T.P. of 1889-90	4,814	1,100	..	1,100	..
16	Minor original works (lump sum)	28,561	..	9,300	..	9,300
17	Repairs (lump sum)	48,000	..	4,000	..	4,000
	Total ..	..	2,300	13,300	2,300	13,300
	AGRICULTURAL WORKS.					
	RIVER CONSERVANCY.					
	Repairs.					
18	Lump sum grant (Tanjore division)	25,000	..	8,000	..	8,000
19	Do. (Trichinopoly division) ..	24,000	1,850	..	1,850	..
	RIVER EMBANKMENTS.					
	ORIGINAL WORKS, MAJOR.					
	Tanjore division.					
20	Cauvery right bank from Vennár head to Kodamurty head and left bank from grand anicut to Triviar bridge Estimate Rs. 29,100, sanctioned in G.O., No. 497 I., dated 14th October 1889	8,000	1,200	..	1,200	..
	Tinnevelly division.					
21	Támbraparni right bank below Srívaikuntham anicut from 9 to 10¾ miles. Forming cross bank and raising the. Estimate Rs. 12,290, sanctioned in G.O., No. 430 I., dated 10th September 1889.	1,604	1,047	..	1,047	..
22	Támbraparni left flood bank between 11⅛ to 12¾ miles below Srivaikuntham anicut near Mukkam village—Realignment of. Estimate Rs. 16,000, sanctioned in G.O., No. 574 I., dated 23rd November 1889	8,000	3,000	..	3,000	..
23	Minor works (lump sum grant)	1,000	332	..	332	..
	Trichinopoly division.					
24	Minor works (lump sum grant)	500	..	1,200	..	1,200
25	Repairs (lump sum grant)	11,350	..	650	..	650
	Total ..	..	7,429	9,850	7,429	9,850

2. *Item* 1.—A sum of Rs. 3,000 was applied for in this office No. 1289 T.J., dated 29th September 1890, but only Rs. 2,559 were sanctioned in G.O., No 632 I., dated 4th November 1890; the balance is now asked for.

Item 2.—An additional grant of Rs. 3,000 was applied for in this office No. 1289 T.J., dated 29th September 1890, but only a sum of Rs. 2,000 was allotted in G.O., No. 632 I., dated 4th November 1890; the balance is again asked for.

Item 3.—The additional grant is required to pay off the liabilities incurred and to complete the works in hand.

Items 4 *and* 13.—The surrender is partly due to meet the demand on item 3 and partly to the repair estimates not having been pushed on on account of water in tanks.

Item 5.—The existing grant being insufficient, additional funds are required. The sum of Rs. 1,000 now required is in addition to Rs. 2,000 already applied for in this office No. 716 T.P., dated 31st October 1890.

Item 6.—The work will most probably be completed during the current year and the existing grant will not be sufficient; hence the necessity for an additional grant.

Item 7.—Savings on the work not required.

Items 8 *and* 9.—The works are likely to be completed during the current year within the amounts now proposed; hence the necessity for the surrender.

Item 10.—Some savings are anticipated on the work, the estimate for which is being raised; hence a portion of grant is surrendered to meet the demand for item 11.

Item 11.—The existing grant being found insufficient, additional funds are required, which may be met from the amount surrendered from item 10.

Item 12.—The additional grant is required to pay off the liabilities incurred and to complete the works in hand.

Item 14.—Work completed, balance of grant not required.

Item 15.—The estimate provides for rough stone revetment, but rough stones could not be had in the neighbourhood. The only alternative is either to substitute burnt stone or leave the tank unriveted; hence the necessity for the surrender.

Item 16.—The surrenders proposed from items 14 and 15 are recommended to be reappropriated to minor original works. In addition to the above, an extra allotment of Rs. 7,000 will also be utilised if available.

Item 17.—The additional grant, if allotted, will be utilised.

Item 18.—The additional grant is urgently required for river conservancy.

Item 19.—A portion of the existing grant is surrendered to meet the demands for items 24 and 25.

Item 20.—Owing to delay in handing over the land required at Thohur by the revenue authorities, a portion of grant is surrendered.

Item 21.—Work completed, but the payment of compensation for land has not yet been made, which will take some time to be settled as the reference is before the District Judge. It is, therefore, proposed to close the accounts and to frame an estimate to meet the cost of compensation when settled; hence the balance of grant is surrendered.

Item 22.—The land required for the work not having as yet been handed over, a portion of grant is surrendered.

Item 23.—The existing grant being found in excess of requirements, a portion is surrendered.

Items 24 *and* 25.—Existing grants being insufficient to meet the sanctioned estimates in hand, additional funds are required, which may be met from the amount surrendered from item 19.

From Lieut.-Colonel A. C. SMITH, R.E., Superintending Engineer, VI Circle, to the Chief Engineer for Irrigation, dated Trichinopoly, 4th December 1890, No. 1717 T.J.

I have the honor to request that the additional grant of Rs. 8,000 applied for for item No. 18 (River Conservancy, Repairs, lump sum grant, Tanjore division) in this office No. 1685, dated 29th November 1890, be reduced to Rs. 1,000, as the Executive Engineer now reports that the former amount was applied for under misapprehension of the practice of the division.

Order—dated 15th December 1890, No. 753 I., Public Works.

There are no funds available at present to meet the demands for items 1 and 2.

2. The sum of Rs. 1,300 required for item 3 together with Rs. 299 for establishment charges is appropriated from the balance of the reserve under "Provincial, 43. Minor Works and Navigation," "Capital Account."

3. The amount surrendered from the grant for item 4 together with Rs. 230 for establishment charges is reappropriated to meet the demand for item 5.

4. The amounts surrendered from items 7, 8, 9, 10 and 13 aggregate Rs. 3,480, of this Rs. 1,900 are reappropriated to item 6 and Rs. 1,580 to meet in part the demand of Rs. 2,000 for item 11. To meet the balance of demand for this item Rs. 420 are appropriated from the reserve of Rs. 1,265 under "Irrigation and Navigation Works for which neither Capital nor Revenue Accounts are kept," "Original Works." The balance of the reserve, viz., Rs. 845, and the reserve of Rs. 515 under "Irrigation and Navigation Works for which neither Capital nor Revenue Accounts are kept," "Repairs," are appropriated to meet in part the demand of Rs. 2,000 for item 12.

5. The amounts surrendered from items 14 and 15, aggregating Rs. 2,300, are appropriated to meet in part the demand of Rs. 9,300 for item 16. The balance of this demand, viz., Rs. 7,000, and the demand of Rs. 4,000 for item 17 are appropriated by reducing the existing grants for Tank Restoration works in the Godávari Eastern, Godávari Western and South Arcot divisions as shown below :—

	Minor original works.	Repairs.
	RS.	RS.
Godávari Eastern	2,000	2,000
Do. Western	1,000	2,000
South Arcot	1,000	3,000
Total ...	4,000	7,000

6. The amount not required for item 19 is reappropriated to meet the demands for items 24 and 25. Rupees 1,000 of the surrender from item 20 are reappropriated to meet the demand of Rs. 1,000 for item 18 as stated in the Superintending Engineer's letter, No. 1717 T.J., dated 4th December 1890. The balance of the surrender from item 20 and the surrenders from items 21, 22 and 23, aggregating in all Rs. 4,579, will be held in reserve under "Agricultural," "Original Works," to meet future demands.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" " " V "
" " " VI "
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 15th.

Recd. *Encl.*

G.O., 15th Dec. 1890, No. 753 I.

DECEMBER.

Funds

Appropriating — for certain works in the VI Circle.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From the Officiating Under-Secretary to the Government of India, Public Works Department (Account—Irrigation), to the Secretary to the Government of Madras, Public Works Department, dated Calcutta, 4th December 1890, No. 78 A.I.

In acknowledging receipt of your letter No. 624 I. of the 4th ultimo, I am directed to inform you that the Government of India is pleased to sanction an additional grant of Rs. 1,00,000 for the current year under " 42. Major Works (Working Expenses)."

2. With this addition, the grant under " 42. Major Works (Working Expenses)" in Madras for 1890-91 will stand at Rs. 11,93,000.

ORDER—dated 15th December 1890, No. 754 I., Public Works.

Communicated to the officers concerned for information and guidance with reference to G.O., No. 623 I., dated 4th November 1890.

2. The following deferred telegram will be sent to the Superintending Engineers, I, II, III and VI Circles :—

India sanctioned additional grant under 42 applied for in G.O., No. 623 I., fourth ultimo.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
,, Superintending Engineers, I, II, III, IV and VI Circles.
,, Examiner, Public Works Accounts.
,, Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 15th.

Recd. *Encl.*

G.O., 15th Dec. 1890, No. 754 I.

DECEMBER.

Additional Grant

Letter from the Government of India sanctioning an — of Rs. 1,00,000 under "42. Major Works (Working Expenses), communicated to the officers concerned for information and guidance.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

Read—the following papers :—

No. 359 S.E.

Report of progress for November 1890.

Clearing the site of the main dam was vigorously pushed on on both sides of the river. By the end of the month almost all the earthwork properly so-called was completed on the left side and boulders and decomposed rock exposed the whole way up. What appears to be solid rock has been exposed beyond the front wall on the left flank. On the right side of the river the excavation has been carried on up the hill and shows the same formation of decomposed rock and boulders. The rock still continues up at the same slope in the line of the front wall. The inner front wall was proceeded with slowly, the water being conveyed over the top of it as it rose in a flume supplied by a number of picottahs and hand-pumps. These just hold the water at a certain level and no more. The concrete filling between the rear walls was continued through the wooden shoot to a depth of about 5 feet. After it had been allowed some days, the water was removed by picottahs and hand-pumps and it was found that the top 18 inches at any rate had not set. No more was done here, as the picottahs could not keep the water down and were very expensive, so it was decided to leave this until the steam pumps arrived. One boiler for a pulsometer arrived at the end of the month. There has been great delay in getting up the boilers and other machinery owing to the bad state of the road and constant freshes in the rivers in the Cumbum valley.

Two more vents were closed in the line of the front wall and the floor built up behind semi-circular shutters to levels of 14 and 17, respectively. The wall of the turbine channel was pushed on and some of the piers commenced. The rock is found to be very low at the site of the weir and has not quite been reached yet. The water-way for the river on the right flank at the end of the month consisted of the forty-feet extension of front wall at 16, two vents of 12 feet at 10, one at 13, one at 14, one at 17.

Four stone-crushers have been steadily at work on the right bank escape.

Main workshop.—The countershaft and its pulleys has been fixed in a bed of concrete on the ground floor; the mortar and concrete mixers are put in place; timber sawn and brought in for the frames of the machines and for the driving terminal of B tramway; the steam launch hull was fitted together and put into the water. In Thekady sub-division the foundations of No. 2 lock weir were proceeded with from about the middle of the month. The concrete previously laid was found to have set well without any leak. This was extended and made ready for the superstructure on the right flank.

Wire tramway.—The rope has been spliced and tightened between A and C. Some of the posts are found too high and will be lowered. The channel was completed and the cistern about half finished.

Water-shed cutting.—Towards the end of the month a number of coolies set free from other works were put on portions near Thekady bridge, the water being baled out in sections. Blasting was recommenced in the deep cutting near the tunnel mouth. The overseer's house and the store-shed are in an unpleasant position regarding this work, the stones having knocked a few holes in the roof of the latter already. Protective thatching will be placed over this building.

Tunnel.—The reservoir bank along the Peermaad road was completed. New troughing and the diversion of the turbine channel were also completed except some sloping back of the banks of the new cut. Water was passed through and machine drilling commenced on the 29th. The turbine has been improved by filing the guide blades to make them the same distance apart throughout. With all valves in, 31lb. was obtained. Work at the south end from the shaft cannot proceed without pumps, as there is too much water to be removed by the tedious process of hoisting and lowering wagon bodies. The main tunnel from the junction of the circular tunnels was extended 15 feet, total 25 feet.

There has been no rain and the present supply of water in the reservoir will fail in a month if not replenished.

The health among the office establishment continues very bad.

PERIYAR,
6th December 1890.

(Signed) H. S. TAYLOR,
Supt. of Works, No. I, Periyár division.

Note by the Chief Engineer, Public Works Department.

Submitted for the information of Government.

2. The progress on the whole is satisfactory, but the delay in the arrival of the pumping machinery, which is greatly wanted, is unfortunate.

3. The result of the excavation on the left bank is more promising than was expected, the decomposed rock which always overlies the solid rock having been found sooner than appeared probable at the date of the last reports.

4. The concrete between the new walls referred to in the Superintendent of Works' report was executed with Madras cement, which is generally very good, but is uncertain, and orders have been given that English cement shall be used for all work deposited in water.

5. No further raising of the water above the dam should be allowed until the inner walls have been completed and the concrete filling between them and the outer walls allowed to set.

6. If there is likely to be any further delay in the arrival of the pulsometer boilers, the Superintendent of Works should consider whether it would not be desirable to bring one or both of the engines now at work on the right bank escape close to the river and use their boilers for working the pulsometers. The completion of the foundation of the main dam is of more importance than the collection of a large stock of material for concrete.

7. The delay in the tunnelling work caused by the want of water is much to be regretted.

(Signed) J. PENNYCUICK, Colonel, R.E.,
Chief Engineer, P.W.D.

ORDER—dated 16th December 1890, No. 756 I., Public Works.

Ordered that the report be forwarded to the Government of India in continuation of this department endorsement, No. 738 I., dated 9th December 1890.

2. The attention of the Superintendent of Works is drawn to the note by the Chief Engineer above recorded.

3. The Superintending Engineer, VI Circle, will expedite the submission of the progress report of No. II, Periyár division, for the month of November.

(Here enter No. 757 I., dated 16th December 1890.)

(True Extract.)

(Signed) J. PENNYCUICK, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintendent of Works, No. I, Periyár division.
,, Superintending Engineer, VI Circle.
,, Chief Engineer for Irrigation.
,, Revenue Department.

ENDORSEMENT—dated 16th December 1890, No. 757 I., Public Works.

Forwarded.

(By Order.)

(Signed) J. PENNYCUICK, Colonel, R.E.,
Secretary to Govt., P.W D.

IRRIGATION.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 16th.

Recd. *Encl.*

G.O., 16th Dec. 1890, Nos. 756, 757 I.

DECEMBER.

Periyar Project

Forwarding the progress report of works in the — for November 1890.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation, Account.

READ—the following paper :—

From Lieut.-Colonel R. R. E. DRAKE-BROCKMAN, R.E., Superintending Engineer, IV Circle, to the Chief Engineer for Irrigation, dated Barur, 22nd November 1890, No. 113-E.I.

In continuation of my letter No. 84-E.I., of 13th September 1890, I have the honor to forward, for sanction and provision of funds, plans and estimate, amounting to Rs. 6,220, for providing scouring sluices to the Mungamari surplus weir in the right bank of the Arkencotta Channel, Coimbatore district.

2. The report which accompanies the estimate explains the necessity for the work.

3. The file of papers connected with the Mungamari weir, received with your memorandum No. 23-C.I., of 24th September 1890, is herewith returned.

ENCLOSURE.

REPORT and Specification to accompany the Estimate for constructing nine scouring sluices in the Mungamari Surplus Weir in the right bank of the Arkencotta Channel (No. 6), Satyamangalam taluk, Coimbatore district.

	RS.
Amount of Estimate	6,130

This weir was built in the year 1878 (December), with a solid masonry body wall, and, although it was clearly intended that scouring sluices should have been provided in it, to dispose of the large quantity of silt brought down in floods by the Mungamari hill torrent, they were, for some unknown reasons, omitted.

It is intended now to supply this want, which is essential to keep the channel in working order at all times.

The scouring sluices will be nine in number placed on the east flank of the weir, and 17′ from the east wing wall. This position will accord with the point at which the hill stream debouches into the Arkencotta Channel and will therefore more readily dispose of its surplus waters.

The vents will be 4′ wide and 5′ high, their cills being placed at one foot below the normal bed level of the channel. The top of the shutters will be level with the crest of the weir.

The body wall of the weir will be cut down to cill level, leaving piers of 3′ in thickness between each vent. These, as well as the floor and side walls of the vents, will be cased with cut stone.

The floors will be laid with an inclination so as to terminate on the present iucurred apron of the weir at a point about 7′ from the outer edge of the retaining wall. This slope is intended to facilitate the movements of the *debris* brought down by the hill stream which consists of large gravels and small boulders.

The piers will be raised to a height of 9½ feet above the crest, so as to allow the bottom of the shutters, when fully lifted, to be 2′ 9″ above the crest. The M.W.L. in floods has been calculated to be at 45·85, or 4′ above the crest, but although, under the proposed arrangements, the lower edge of the shutters will be submerged to a depth of 1′ 3″, it is thought that by means of these scouring sluices, the M.W.L. will not attain to the calculated level and that only about 9″ of the shutters will, in practice, be submerged.

The shutters will be made of the best teakwood, 2½″ thick, and work in angle iron lined grooves in the piers 2½″ deep. The screw and screwbox will be carried on two teakwood beams 6′ × 9′ deep, with their ends laid on the piers so that their upper surface corresponds with the level of the broadway, and secured by a cover plate held down by bolts 4′ long built into the piers whilst under construction.

The screw nut will be worked by a capstan spanner of a height sufficient for efficient working.

A railing of angle iron standards let into the cut stone platform with iron bar rails will be placed on the lower side of the roadway to afford protection to the lascars when working the shutters.

Owing to the small thickness of the body wall, it was not found feasible to give sharp cut-waters to the piers. The edges therefore of them in front of the vents have been rounded to facilitate the draught, and this form, it is thought, is more suited to withstand the rush of the very heavy *debris* that will be carried through the vents in times of flood without damage or undue abrasion.

To prevent the screw iron from bending when the shutters are being screwed down, two iron bars, 1½″ diameter, will be built into the piers at M.W.L., sufficiently apart to allow of the screw and shutter passing freely between them.

The work will be carried out according to the measurements given on the plan and sections and finished off in a workmanlike manner and of the best materials throughout.

All masonry demolished and removed from the body wall and apron will be disposed of in such manner as the officer in charge of the work may direct.

(Signed) R. R. E. DRAKE-BROCKMAN, Lieut.-Col., R.E.,
Superintending Engineer, IV Circle.

No. 190 I.

Submitted to Government.

2. The estimate, as altered in this office, amounts to Rs. 6,130. The Arkencotta Channel is one of the works for which Capital and Revenue Accounts were ordered to be kept in G.O., No. 286 I., dated 21st May 1890, and it is recommended that the proposed outlay may be charged to the Capital Account of the system as it exceeds the limit of Rs. 2,500 prescribed for Revenue Extensions and Improvements.

CHEPAUK,
8th December 1890.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

To the Joint Secretary to Government, Public Works Department,
Irrigation Branch.

ORDER—dated 17th December 1890, No. 759 I., Public Works:

The following estimate is sanctioned :—

Irrigation.
43. Minor Works and Navigation.
Irrigation and Navigation Works for which Capital and Revenue Accounts are kept.
Arkencotta Channel System.
Capital Account.
I. Works.
(2) Main Canals and Branches.
F (1). Other Cross Drainage Works.

Providing scouring sluices to the Mungamari Surplus weir—Estimate... Rs. 6,130

2. This sanction has been registered as No. 110 I. of 1890-91.

3. Funds to the full extent of the estimate now sanctioned will be provided in the preliminary issue of the budget estimates for Minor Works and Navigation for the ensuing official year.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, IV Circle,
with five enclosures.
„ Examiner, Public Works Accounts.
„ Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 17th.

Recd. *Encl.*

G.O., 17th Dec. 1890, No. 759 I.

DECEMBER.

Mungamari Surplus Weir, Coimbatore District

Estimate of Rs. 6,130, for providing scouring sluices to the —, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following papers :—

From Lieut.-Colonel A. C. SMITH, R.E., Superintending Engineer, VI Circle, to the Chief Engineer for Irrigation, dated Trichinopoly, 30th November 1890, No. 1694 T.J.

I have the honor to submit, for your approval and sanction of Government, the accompanying estimate, amounting to Rs. 3,150, for making a straight cut in Corayar, in Athengudi limits.

2. There is a dangerous set on the left bank and the straight cut now proposed is absolutely necessary to prevent breaches at the spot.

3. The rates entered are fair and I request that the estimate may be sanctioned as soon as possible.

Enclosure.

Report to accompany the estimate for making a straight cut in Corayar, in Athengudi limits.

Amount of Estimate, Rs. 3,150.

This estimate was called for by the Executive Engineer in memorandum No. 1382, dated 15th May 1889, and is included in the scheme of works for 1890-91.

It is proposed to make a straight cut through the padugai as shown in yellow in plan and to throw back the right bank, as well as cutting projections above and below the straight cut as aligned by red lines and slightly retiring the bad bend of left bank above the straight cut; and also forming cross banks across the old course to the level of padugai and repairing right bank. There is a dangerous set on the left bank which for years has been protected by groynes and silt fences to prevent breaches. In 1884 and previous years, the bank at this spot breached, causing considerable damage to the crops.

Some years ago an estimate was framed for this work, but the mirassidars of Vilalkotagam village raised objections to it on the ground that the proposed course of river would pass directly through their village and that some of their land would be taken up. The proposal was therefore abandoned. The line then proposed ran through their village which consists of only a few huts.

The present estimate provides that the new bank should join the old bank north of the huts. To this also the Vilalkotagam mirassidars object. They petitioned the Collector and the Executive Engineer on the subject a short time ago. Considering that the line has been altered so as not to pass through their village and that only a very small portion of nunjah land will be required, there can be no reasonable objection on the part of these mirassidars to the work being carried out.

This estimate amounts to Rs. 3,150, of which Rs. 288 will have to be paid for compensation for land. The mirassidars of Athengudi have consented to give up their land on payment, but the mirassidars of Vilalkotagam object to give up their land, which will, if this estimate is sanctioned, have to be acquired under the Land Acquisition Act—*vide* Mannárgudi Tahsildar's letter No. 711, dated 1st April, attached hereto.

9th May 1890.

(Signed) J. C. CAMPBELL,
Overseer, Mannárgudi Taluk.

(Signed) J. SUBRAMANIAM, R. B.

20th July 1890.

(Signed) C. NORFOR,
Executive Engineer.

No. 189 I.

Note by the Chief Engineer for Irrigation.

The estimate is recommended for sanction, but in carrying out the work the Superintending Engineer should give the following points consideration :—

(*a*) Advisability of removing the surface sand and seating the "cross bank" across the old course at some 3 feet or so below present bed level.

(*b*) Advisability of omitting the lower "cross bank" and allowing the water to back up the old course between the sites of the proposed "cross banks" and so silting it up.

2. The "cutting projections above and below the straight cut" does not appear to be provided for in the estimate.

CHEPÂK,
8th December 1890.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 17th December 1890, No. 760 I., Public Works.

The following estimate is sanctioned :—

Irrrigation.
43. Minor Works and Navigation.
Agricultural Works.
River Conservancy.
Original Works.
Negapatam Division.
Making a straight cut in Corayar, in Athengudi limits, Estimate Rs. 3,150.

2. This sanction has been registered as No. 111 I. of 1890-91.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, V Circle, with ten enclosures.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 17th.

Recd. *Encl.*

G.O., 17th Dec. 1890, No. 760 I.

DECEMBER.

Corayar

Estimate of Rs. 3,150, for making a straight cut in —, in Athengudi limits, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From Lieut.-Colonel R. R. E. DRAKE-BROCKMAN, R.E., Superintending Engineer, IV Circle, to the Chief Engineer for Irrigation, dated Salem, 10th December 1890, No. 119-E.I.

Adverting to your circular memorandum, No. 28 G., dated 17th November 1890, I have the honor to submit herewith three applications for modifications of allotments under Irrigation in the Coimbatore division, and to request you will be good enough to obtain the orders of Government thereon as early as possible.

2. The Executive Engineer, West Coast Division, has sent in a *nil* statement.

ENCLOSURES.

COIMBATORE DIVISION.

STATEMENT showing the surrenders and demands under 43. Minor Works and Navigation.

Ordinary.

Division.	Item number.	Name of work.	Amount of estimate.	Number and date of sanction.	Outlay to end of March 1890.	Outlay in the current year up to 31st October 1890.	Balance of estimate.	Existing grant for 1890-91.	Proposed increase or decrease.	Revised or proposed grant.	Remarks.
		WORKS FOR WHICH NEITHER CAPITAL NOR REVENUE ACCOUNTS ARE KEPT.	RS.		RS.	RS.	RS.	RS.	RS.	RS.	
		Major Works.									
Coimbatore ..	1	Improving the tank and channel of Ammanitalava or Punchapalli.	7,820	G.O., No. 610 I. of 17th Oct. 1888.	7,550	480	210	270	791	1,061	Work is completed. The additional grant now applied for is required to meet the liabilities on the work.
		Minor Works.									
	2	Coimbatore district	2,742	....	393	309	2,040	3,000	1,500	1,500	It is not possible to work out the grant to the full extent within the current offical year owing to water in channels and tanks.
	3	Salem district	5,743	....	2,594	285	2,864	3,500	1,000	2,500	Do. do. do.
		Total ..	..		..	..	..	6,770	1,709	5,061	

COIMBATORE,
27th November 1890.

(Signed) G. B. LAMBERT,
Executive Engineer.

COIMBATORE DIVISION.

STATEMENT showing the surrenders and demands under 43. Minor Works and Navigation.

Division.	Item number.	Name of work.	Amount of estimate.	Number and date of sanction.	Outlay to end of March 1890.	Outlay in the current year up to 31st October 1890.	Balance of estimate.	Existing grant for 1890-91.	Proposed increase or decrease.	Revised or proposed grant.	Remarks.
		AGRICULTURAL WORKS.	RS.		RS.	RS.	RS.	RS.	RS.	RS.	
		Minor Works.									
Coimbatore Division.	1	River embankment	..	..	..	..	..	300	**300**	..	The grant of Rs. 300 is not required as there are no estimates under this head.
		Miscellaneous.									
	2	Coimbatore district	1,296	..	592	378	326	1,000	**160**	648	The sum of Rs. 160 is not required as there are no estimates to work out.
	3	Salem district	192	..	..	112	80			192	
		Total ..	1,488		592	490	406	1,000	**−160**	840	
		REPAIRS.									
		River Conservancy.									
	4	Coimbatore district	4,625	..	613	1,532	2,480	3,810	**−190**	3,000	It is not probable that more than Rs. 3,620 will be utilized within the close of the official year.
	5	Salem district	624	..	..	358	266			620	
		Total ..	5,249		613	1,890	2,746	3,810	**−190**	3,620	
		Grand Total ..	6,737		1,205	2,380	3,152	5,110	**−650**	4,460	

(Signed) G. B. LAMBERT,
Executive Engineer.

COIMBATORE DIVISION.

STATEMENT showing the surrenders and demands under 43. Minor Works and Navigation.

Tank Restoration Scheme Works.

Division.	Item number.	Name of work.	Amount of estimate.	Number and date of sanction.	Outlay to end of March 1890.	Outlay in the current year up to 31st October 1890.	Balance of estimate.	Existing grant for 1890-91.	Proposed increase or decrease.	Revised or proposed grant.	Remarks.
		WORKS FOR WHICH NEITHER CAPITAL NOR REVENUE ACCOUNTS ARE KEPT.	RS.		RS.	RS.	RS.	RS.	RS.	RS.	
		Major Works.									
Coimbatore	1	Restoring anicut, constructing regulators to main and branch channels, and providing four pot sluices to No. 2 Areapuram channel.	2,675	Register No. 79T. of 1889-90.	..	660	2,015	2,675	**− 1,175**	1,500	The work cannot be completed before the close of the official year on account of water in the channel.
	2	Constructing a head-sluice to the channel, an irrigation sluice to the tank, and extending and improving the escapes of the Papanakarai tank and channel.	2,700	Register No. 81 T. of 1889-90.	..	..	2,700	2,700	**− 1,700**	1,000	Owing to difficulty in getting labor at Kollegal the work cannot be completed before March 1891.
		MINOR WORKS.									
		Survey Operations.									
	3	Cost of Survey establishment required for the No. 4 Party, Tank Restoration Scheme.	3,864	G.O., No. 10 I., dated 6th Jan. 1890.	..	1,726	2,138	3,864	**− 904**	2,960	The average expenditure for the past seven months being Rs. 246 it is not probable that more than Rs. 2,960 will be spent before March 1891.
		Total ..	9,239		..	2,386	6,853	9,239	**3,779**	5,460	

COIMBATORE,
27th November 1890.

(Signed) G. B. LAMBERT,
Executive Engineer.

ORDER—dated 17th December 1890, No. 762 I., Public Works.

The proposed modifications of allotments are sanctioned and the amounts not required are held in reserve under the following heads :—

Provincial.
43. Minor Works and Navigation.
Ordinary "Imperial" Works.

	RS.	RS.
Original Works	1,709	
		1,709
Tank Restoration Works.		
Original Works	2,875	
Survey establishment	904	
		3,779
Agricultural Works.		
Original Works	460	
Repairs	190	
		650
Total ...		6,138

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
,, Superintending Engineer, IV Circle.
,, Examiner, Public Works Accounts.
,, Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras

PUBLIC WORKS.

Dated December, 17th.

Recd. *Encl.*

G.O., 17th Dec. 1890, No. 762 I.

DECEMBER.

Modifications of Allotments

Sanctioning certain — in the Coimbatore division.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

From J. HANNAN, Esq., Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated Bezváda, 8th November 1890, No. 211 B.C.

I have the honor to forward herewith plans, revised estimates, &c., as per margin, amounting to Rs. 14,400, for improvements to Buckingham canal from Trivettur bridge to Shadayancuppam lock, and to request you will be good enough to obtain sanction of Government for the same.

- 3 Sheets of longitudinal and cross sections.
- 1 Sluice plan (tracing).
- 1 Detailed and abstract estimate.
- 1 Comparative statement.
- 1 Copy of the Executive Engineer's No. 961, dated 27th October 1890.

2. The original estimate for this work sanctioned in G.O., No. 195 I. of 16th February 1884, amounts to Rs. 19,775 and the revised to Rs. 14,400; the net saving is Rs. 5,375, which can be added to the provision for unforeseen works of the project.

3. The estimate has been revised with reference to item 3, para. 1, section I, of your inspection notes embodied in G.O., No. 623 I. of 17th December 1889, and the causes of excesses and savings between the original and revised estimates have been explained in the remark column of the comparative statement. The principal item of excess is rough stone pitching backed with clay, which is provided in the revised estimate, so as to break the impact of waves to the slopes of the bank between 53 and 55 furlongs, and the principal items of savings are on "clearing silt, cutting high bank, and turfing"; the first two are reported to be not necessary and the third is not required south of Trivettur bridge.

4. I also forward copy of the Executive Engineer's report No. 961 of 27th October 1890, and state that the proposals made in the latter part of the same have been approved of by me.

Enclosure.

"Revised" Estimate Form.—Abstract.

Quantity.	Description of work.	Rate.	Per	Amount.	Total.
1	2	3	4	5	6
		RS. A. P.		RS.	RS.
947,403	Cubic feet earthwork embanking	3 7 6	1,000	3,286	
1,403,098	Do. do. long lead ..	4 10 0	1,000	6,489	
20,464	Do. rough stone pitching backed with clay ..	15 0 0	100 c. ft.	3,070	
272,324	Square feet turfing	0 5 6	100 s. ft.	936	
	Casuarina hedge along outside toe of western bank, say	..	..	268	
	Superintendence at	1 8 0	Per cent.	210	
	Contingencies at	1 0 0	Do.	141	
					14,400
				Grand Total of Estimate ..	14,400

(Signed) J. HANNAN,
Superintending Engineer, II Circle.

26th August 1890. (Signed) J. A. POWER, Captain,
Offg. Executive Engineer, Buckingham Canal Division.

7th August 1890. (Signed) J. A. POWER, Lieut.,
Asst. Engineer, Buckingham Canal Division.

No. 192 I.

Submitted to Government with a recommendation that the revised estimate of Rs. 14,400 be sanctioned.

CHEPÂK,
10th December 1890.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 18th December 1890, No. 763 I., Public Works.

The following revised estimate, amounting to Rs. 14,400, for improvements to Buckingham canal from Trivettur bridge to Shadayancuppam lock is sanctioned in lieu of the provision of Rs. 19,775 made for the work in the summary of estimates printed in Proceedings of the Madras Government, No. 218 I., dated 9th April 1890 —*vide* item 4 of section I of Northern Canal—the saving of Rs. 5,375 effected by the present estimate being added to the balance available for unforeseen works of the Buckingham canal, which will then be increased to Rs. 89,011 :—

Irrigation.
43. Minor Works and Navigation.
Irrigation and Navigation.
Works for which Capital and Revenue Accounts are kept.
Buckingham Canal.
Capital Account.
I. Works.
(2) Main Canals and Branches.
Northern Canal, Section I.
L. Earthworks.

	RS.
Improvements to canal from Trivettur bridge to Shadayancuppam lock, estimate	14,400

2. This sanction has been registered as No. 112 I. of 1890-91.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, II Circle, with nine enclosures.
„ Examiner, Public Works Accounts.
„ Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 18th.

Recd. *Encl.*

G.O., 18th Dec. 1890, No. 763 I.

DECEMBER.

Buckingham Canal

Estimate of Rs. 14,400 for improvements to the — from Trivettur bridge to Shadayancuppam lock, sanctioned with remarks.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following papers :—

Proceedings of the Board of Revenue, dated 14th May 1889, No. 2530.
Letter to the Board of Revenue, dated 24th June 1889, No. 168 M.
Proceedings of the Board of Revenue, dated 24th August 1889, Mis. No. 3287.

From Lieut.-Colonel A. C. SMITH, R.E., Superintending Engineer, VI Circle, to the Chief Engineer for Irrigation, dated Trichinopoly, 12th November 1890, No. 758 T.N.

With reference to your memorandum No. VI/14 T.N., dated 16th April 1890, regarding list of tanks to be classed as Imperial in the Tinnevelly district, I have the honor to report that the first work on the list, viz., Kariselkulam, has already been classed as Imperial, its number in the Imperial list being 55. Only the supply channel of this tank was shown on the sketch-map and printed list; the position of the tank has now been marked on the sketch-map and its name entered in the list under the column " name of tank."

2. Works Nos. 2, 3, 5, 6 and 9 on the list, viz., Pattakulam, Sakulanerikulam, Settikurichikulam, Kattangulam and Vembacottai Periacolum irrigate over 200 acres each and they may be classed as Imperial.

3. The following works, No. 4 Saimalai Periakulam, No. 7 Melamadai and Kelamadai Periakulam, No. 8 Nemmani Periakulam, No. 10 Ottapidarum Periakulam, No. 11 Thimmangulakurichi Periakulam and No. 12 Meignanapuram Sadayaneri tank, although all irrigating more than 200 acres, have not been classed as Imperial owing to their position being far from any Imperial work. Of all these Melamadai and Kelamadai Periakulam and Nemmani Periakulam are close together, the distance from Sattur being about 4 miles. These may be classed as Imperial. Thimmamangulamkurichi Periakulam and Saimalai Periakulam are close together, but are about 10 miles from the nearest Imperial work. The first of these two will be put in order shortly on an estimate prepared by the Tank Restoration Party, which is working in this direction; the second has already been put into thorough order, and it would be convenient if these were left as minor works. Ottapidarum Periakulam and Meignanapuram Sadayaneri tank are each in isolated positions in different taluks and far from any Public Works Department work; they have both been thoroughly repaired and it would be well to allow them still to be classed as minor works. Work No. 13 Kottikal may be classed as an Imperial work for the reasons given by the Collector.

4. I approve of the classification of works Nos. 2, 3, 5, 6, 7, 8, 9 and 13 as Imperial, their positions being marked on the accompanying map.

5. The two enclosures of your memorandum under reference are herewith resubmitted together with a list showing the number of works now classed as Imperial.

Proceedings of the Board of Revenue, dated 19th March 1890, No. 1167.

No. 188 I.

Submitted to Government with a recommendation that the tanks and channels shown in the accompanying list may be added to the list of "Imperial" works, Tinnevelly district.

No. 1, Karisalkulam tank.
" 4, Toimalai Periakulam.
" 10, Ottapidarum Periakulam.
" 11, Tirimangalakurchi Periakulam.
" 12, Meinganapuram Periakulam.

2. Of the works recommended to be classed as Imperial by the Collector, those noted in the margin have not been included in the list for the reasons given by the Superintending Engineer.

3. The following corrections should be made in manuscript in the list of Imperial works, Tinnevelly :—

No. 55—*for* 441 acres *read* 556 acres.
In column "name of tanks" enter "Karisalkulam."

CHEPÂK,
8th December 1890.

(Signed) H. E. CLERK,
for Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ENCLOSURE.

SUPPLEMENTAL List of Irrigation Works to be classed as "Imperial"—Tinnevelly District.

Taluk.	No.	Source of supply.	Name of group or system.	Name of channels.	Name of tanks.	Present Irrigation.	
						Area.	Revenue.
						ACS.	RS.
Srivilliputur ..	8 A.	Jungle stream.	....	....	Kottayur Settie-kurchikulam.	240	1,405
Do. ..	23 A.	Do. ..	....	....	Kottankulam ..	204	992
Sankaranainárkoil.	37 A.	Kottamalayar river.	....	Pattakulam channel	Pattakulam tank.	217	1,031
Do.	38 A.	Do. ..	....	Sangalanerikal ..	Sangalanerikulam.	205	1,146
Sattur	34 A.	Kayakudi river.	Vembakottai anicut.	Vembakottai channel.	Vembakottai Periakulam.	208	739
Do.	34 B.	Sattur ..	Nemmani anicut.	Nemmani channel.	Nemmani Periakulam.	446	1,993
Do.	34 C.	Arjunanadi ..	Irukankudi anicut.	Irukankudi channel	Mellamadai Periakulam.	408	1,801
Ambásamudram ..	310 A.	Manimuthanadi.	Kothikal anicut ..	Kothikal channel.	Kottikol ..	197	2,125

CHEPÂK,
8th December 1890.

(Signed) H. E. CLERK,
for Chief Engineer for Irrigation.

ORDER—dated 18th December 1890, No. 764 I., Public Works.

The proposals of the Chief Engineer for Irrigation are approved.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, VI Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 18th.

Recd. *Encl.*

G.O., 18th Dec. 1890, No. 764 I.

DECEMBER.

Imperial Works, Tinnevelly District.

The proposal of the Chief Engineer for Irrigation to include certain tanks and channels in the list of —, approved.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper:—

From G. D. WYBROW, Esq., Superintending Engineer, I Circle, to the Chief Engineer for Irrigation, dated Dowlaishweram, 2nd December 1890, No. 532 G.L.

In continuation of my telegram No. 138 of yesterday, I have the honor to submit herewith an application for modification of allotments and to request that the additional allotments therein applied for may be sanctioned if possible. Reasons for the modifications proposed are entered against each item in the application.

ENCLOSURE.

APPLICATION for additional or modification of allotments in the I Circle.

Item number.	Name of work.	Existing grant for current year.	Proposed.		Sanctioned by Chief Engineer.		Remarks.
			Increase.	Reduction.	Increase.	Reduction.	
	GODAVARI EASTERN DIVISION.	RS.	RS.	RS.	RS.	RS.	
	43. MINOR WORKS AND NAVIGATION.						
	Irrigation and Navigation Works for which Capital and Revenue Accounts are kept.						
	Revenue.						
	Repairs.						
1	Dumagudiem canal	12,000	..	1,200	..	..	The amount required for the adjustment of one-third of outlay incurred on maintenance of Kovur-Munjair junction canal against 43. Minor Works and Navigation, in accordance with G.O., No. 1156 W. of 30th April 1889, is available for transfer from Dumagudiem canal.
2	Kovur-Munjair junction canal ..	..	1,200	..	..	..	
	Agricultural Repairs.						
	River Embankments.						
3	Diversion of river bank at Pillanka set.	..	3,000	..	..	..	The estimate for this work together with sections will be submitted at an early date. The existing allotment under Agricultural repairs is Rs. 21,000, of which Rs. 13,000 have been given for diversion of Bank canal below Maskapalli lock; nothing can be spared from the balance of Rs. 8,000 for the diversion at Pillanka as it has almost been spent for ordinary repairs.

Application for additional or modification of allotments in the I Circle—*cont.*

Item number.	Name of work.	Existing grant for current year.	Proposed. Increase.	Proposed. Reduction.	Sanctioned by Chief Engineer. Increase.	Sanctioned by Chief Engineer. Reduction.	Remarks.
		RS.	RS.	RS.	RS.	RS.	
	Agricultural Repairs.						
4	River conservancy	10,000	5,000	..	..	..	Rupees 9,000 were worked out to end of October 1890 against the grant of Rs. 10,000. Rs. 6,000 are required for expenditure between now and the close of the official year as follows :—Deducting from this the balance available an additional grant of Rs. 5,000 is essentially required. Of this, Rs. 500 is available for transfer from Agricultural repairs, drainages. Protecting the river margin below anicut in the 1st and 3rd miles .. RS. 1,000 Protective works at Maddur spit .. .. 1,000 River conservancy below anicut for season 1891, 1st part .. .. 1,500 River conservancy above anicut for do. .. 1,000 River protective works at Kulla and Maskapalli sets .. .. 1,500 Total .. 6,000
5	Drainages	500	..	500	..	..	
	GANJAM DIVISION.						
	43. MINOR WORKS AND NAVIGATION.						
	Works for which neither Capital nor Revenue Accounts are kept.						
6	Repairs	10,000	4,000	..	..	..	The expenditure up to the end of October last was Rs. 8,400 against the grant of Rs. 10,000. The additional grant Rs. 4,000 applied for includes Rs. 2,000 asked for in this office No. 890 G.N., dated the 31st October 1890. The extra grant is chiefly required for expenditure on Boari reservoir.
	Agricultural Repairs.						
7	River embankments	5,000	1,000	..	..	..	The outlay to end of October 1890 against the existing grant was Rs. 4,675 and the balance is insufficient to meet the estimates already sanctioned.

2nd December 1890.

(Signed) G. D. WYBROW,
Superintending Engineer, I Circle.

ORDER—dated 18th December 1890, No. 765 I., Public Works.

The Kovur-Munjair canal has not been classed under works for which Capital and Revenue Accounts are kept. Rupees 1,200 required to meet the share of the cost of maintaining this canal chargeable to Irrigation, together with Rs. 276 for establishment and Rs. 18 for tools and plant charges, are allotted by reducing the existing grant for the Dumagudiem canal as shown below :—

	RS.
Maintenance and repairs	1,215
Establishment	279
Total ...	1,494

2. In G.O., No. 736 I., dated 9th December 1890, the amounts required for items 4, 6 and 7 have already been allotted and the grant for item 3 surrendered has been withdrawn.

3. The existing grant for item 6 is Rs. 16,000 or Rs. 2,000 more than what is now reported to be required for it. The sum of Rs. 2,000 is now withdrawn and held in reserve under "Irrigation and Navigation Works for which neither Capital nor Revenue Accounts are kept" "Repairs."

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 18th.

Recd. *Encl.*

G.O., 18th Dec. 1890, No. 765 I.

DECEMBER.

Modifications of Allotments

Sanctioning certain — in the Godávari Eastern and Ganjam divisions.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following papers :—

Letter from the Superintending Engineer, II Circle, dated 15th September 1890, No. 1533 K.S.

Memorandum to the Superintending Engineer, II Circle, dated 25th October 1890, No. II/138 K.S.

From J. HANNAN, Esq., Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated Bezváda, 29th November 1890, No. 2194 K.S.

With reference to para. 2 of your memorandum No. II/138 K.S. of 25th October 1890, I have the honor to forward herewith two old plans and abstract estimates for ordinary staff boats required for the Kistna delta—

	RS.
One for 1st class	2,080
One for 2nd class	1,555

and to request that sanction of Government may be obtained for the same as soon as possible.

ORDER—dated 19th December 1890, No. 767 I., Public Works.

	RS.	RS.
* Balance shown in G.O., No. 591 I. of 28th November 1889		1,92,778
Deduct amount sanctioned in G.O., No. 523 I. of 29th October 1889, for Cockburn's dredger	4,800	
Amount sanctioned in this order	3,620	
		8,420
Balance ...		1,84,358

The following estimates are sanctioned from the balance of the lump sum provision for tools and plant of the Kistna delta system, which will then be reduced to Rs. 1,84,358 * :—

Major Works (Construction).
49. Irrigation.
Kistna Delta System.
Eastern Section.
III. Tools and Plant.
9. Navigation Plant.

	RS.
1. Constructing a 1st-class staff boat	2,080
2. Constructing a 2nd-class staff boat	1,540

2. This sanction has been registered as No. 113 I. of 1890-91.

3. No expenditure should be incurred till funds are available.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle, with four enclosures.
" Examiner, Public Works Accounts.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 19th.

Recd. *Encl.*

G.O., 19th Dec. 1890, No. 767 I.

DECEMBER.

Staff Boats, Kistna Delta System.

Estimates of Rs. 2,080 and Rs. 1,540 for constructing one first and one second class —, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following papers :—

From J. HANNAN, Esq., Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated Bezváda, 1st December 1890, No. 2212 K.S.

I have the honor to forward a completion certificate for the Executive Engineer's quarters at Bezváda.

2. The estimate has been exceeded by Rs. 2,230. Detailed explanations are given of the excesses in the statement accompanying the report. They are, I am sorry to say, very unsatisfactory. Rough stone in chunam cost Rs. 16-13-11 against the estimate rate of Rs. 11-8-0. The cost of similar work done by the present Executive Engineer on his office was only Rs. 10-1-8. The only difference being that the walls of his office are only 13 feet high as against 16 feet on the bungalow. But on the other hand the walls of the office are of rubble pointed on the outside, and the masons had to take more trouble in fitting the face stones neatly, so that the extra labor thus involved was a complete set off against the less height of walls.

Similarly as regards concrete. The cost on the bungalow was Rs. 11-12-1 against the estimate rate of Rs. 10 and the actual rate on the office of Rs. 9-12-5.

Teakwood wrought and put up cost Rs. 3-12-5 against the estimate rate of Rs. 3. The estimate rate was too low. The work ought, however, to have been done for Rs. 3-8-0.

3. I am of opinion that the work should have been carried out at the estimate rates which were ample with the exception of rate for teakwood. That it was not so carried out I attribute to a want of proper check on the expenditure on the part of the officers concerned. At the same time it must be said that they had more work to do than they could look after properly.

4. Now that a head-quarter sub-division has been established, I feel sure that if rates are exceeded in future, satisfactory reasons will be forthcoming.

5. I have the honor to request that excess be sanctioned.

No. 193 I.

Note by the Chief Engineer for Irrigation.

In Proceedings of the Madras Government, No. 625 I., dated 4th November 1890, No. 675 I., dated 19th November 1890, No. 696 I., dated 27th November 1890, and No. 733 I., dated 8th December 1890, the frequency with which in the Kistna district estimates are considerably exceeded has been commented on. In this case the officer under whom the work was chiefly carried out is dead, and in the absence of possibility of explanations further comment is useless and might be unfair; it is recommended that the Examiner be authorised to pass the excess of Rs. 2,230.

2. A revised estimate for the work ought to have been submitted long ago, and as stated in note with Proceedings of the Madras Government, No. 733 I., dated 8th December 1890, more attention appears to be necessary on the part of the Superintending Engineer "to those portions of his duty laid down in paras. 255 and 261 of the Code, especially that part of the latter which deals with examination of registers of works and watch over cost of works."

CHEPÂK,
11th December 1890.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 19th December 1890, No. 768 I., Public Works.

The Examiner of Public Works Accounts is authorised to pass the outlay incurred on the work "Constructing Executive Engineer's quarters at Bezváda," the excess expenditure of Rs. 2,230 being met from the balance of the lump sum provision available for unforeseen works of the Kistna delta system, which will then be reduced to Rs. 1,94,062.

2. This sanction has been registered as No. 114 I. of 1890-91.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle.
" Examiner, Public Works Accounts.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 19th.

Recd. *Encl.*

G.O., 19th Dec. 1890, No. 768 I.

DECEMBER.

Quarters

Authorising the Examiner, Public Works Accounts, to pass the outlay incurred in constructing the Executive Engineer's — at Bezváda.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following papers:—

From G. D. WYBROW, Esq., Superintending Engineer, I Circle, to the Chief Engineer for Irrigation, dated Dowlaishweram, 21st November 1890, No. 1631 G.D.

With reference to G.O., No. 534 I., dated 1st November 1889, I have the honor to submit herewith the annual statements A, A(1), B, C and D showing the navigation receipts and charges of the Godávari delta for the official year 1889-90.

2. The receipts and charges of the year compare with those of the preceding year as follows:—

—	1889-90.	1888-89.	Increase.	Decrease.
	RS.	RS.	RS.	RS.
Receipts.				
1. License fees for Government boats	5,947	6,140	..	193
2. Do. for steamers and dredges	275	275	..	..
3. Do. for staff boats	147	160	..	13
4. Do. for passenger boats	4,235	4,962	..	727
5. Do. for cargo boats	31,218	26,039	5,179	..
6. Do. for miscellaneous, including private and pleasure boats	361	343	18	..
7. Tolls on all kinds of boats and rafts	49,692	52,965	..	3,273
Total ..	91,875	90,884	5,197	4,206
Charges.				
8. Lock establishments	23,182	23,070	112	..
9. Lock and lock weir repairs	17,821	20,534	..	2,713
10. Navigation buildings	988	377	611	..
11. Tow-path maintenance	4,580	3,469	1,111	..
12. Dredging	5,679	9,243	..	3,564
13. Share of canal maintenance	12,137	16,109	..	3,972
14. Miscellaneous, including any charges not appertaining to the first six items	* 3,170	1,986	1,184	..
Total ..	67,557	74,788	3,018	10,249

* Includes repairs of staff boats (Rs. 1,647).

Receipts.

3. The decrease under item 1 is due to punts Nos. 78 and 80 having been condemned and sold by auction.

4. The decrease under item 4 is due to boatmen having preferred to ply their boats on toll tickets, and also to a less number of cargo boats having been licensed.

5. The increase under item 5 is due to more exportation of grain on cargo boats to northern districts.

6. The decrease under item 7 is partly attributable to the closure of Narsápur canal from 22nd February 1890, but the cause of decrease in the Godávari Eastern division the Executive Engineer states that it cannot be explained.

Charges.

7. The chief decreases are due to—

Item 9.—Repairs not having been so heavy this year.

Items 12 *and* 13.—Small quantity of silt brought down by freshes this year.

8. The chief increases are due to —

Item 10.—A compound wall having been built for Dowlaishweram Lock establishment quarters and also to repairs executed to navigation buildings on Ellore and Narsápur canals.

Item 11.—Making a tow-path on right side of Venkiah and Wyeru canal.

Item 14, *Repairs to staff boats.*—In previous year's statements the cost of repairs to these boats was not included, hence the increase.

9. Statement D shows that in 1889-90 eighty-six cases of punishments were inflicted for infringement of navigation rules against sixty-nine in the previous year.

10. The delay in the submission of the above statements is due to late receipt of statements from the Godávari Western division.

11. The Executive Engineers, Godávari Eastern and Western Divisions, state that the amount of license fees and tolls entered in the traffic statements of canals for the year 1889-90 was incorrect, and the amount entered in the above statement are correct figures.

ENCLOSURES.

A.—STATEMENT of Receipts and Charges, Godávari Delta Navigation, for the official year 1889-90.

RECEIPTS FOR THE OFFICIAL YEAR 1889-90.

Description.	Amount.	Remarks.
	RS.	
License fees for Government boats.	5,947	See Statement B.
Do. for steamers and dredges	275	
Do. for staff boats ..	147	
Do. for passenger boats ..	4,235	
Do. for cargo boats ..	31,218	
Do. for miscellaneous including private or pleasure boats ..	361	
Tolls on cargo boats	27,535	
Do. on passenger boats ..	6,973	
Do. on miscellaneous	345	
Do on rafts	14,757	
Do. on dredges	82	
Profit on Boat office at end of March 1889 and credited to navigation receipts in accordance with para. 5 of Examiner, Public Works Accounts, No. 1036 S.E., dated 26th November 1888 ..	54	
Rents collected from staff boats ..	2,066	
Fees collected for painting numbers on boats	258	
	94,253	
Loss	13,056	
Total ..	1,07,309	

CHARGES FOR THE OFFICIAL YEAR 1889-90.

Description.	Amount.	Remarks.
	RS.	
(1) Lock establishment	23,182	See Statement C.
(2) Lock and lock weir repairs ..	17,821	
(3) Navigation buildings	988	
(4) Tow-path maintenance ..	4,580	
(5) Dredging	5,679	
(6) Share of canal maintenance ..	12,137	
(7) Repairs of staff boats	1,647	
(8) Miscellaneous (including charges not appertaining to the first 6 items) general	1,215	
(9) Miscellaneous direct	308	
	67,557	
Interest at 2 per cent. on capital outlay during the year on navigation works proper .. .	382	
Interest for the year on capital outlay on navigation works proper to end of 1888-89 at 4 per cent ..	39,370	
Total ..	1,07,309	

A-I.—STATEMENT of Capital outlay on Navigation works proper of the Godávari Delta from the year 1870-71 inclusive.

Section of delta.	To end of 1888-89.	For 1889-90.	Total.
	RS.	RS.	RS.
Eastern Division	2,76,181	17,436	2,93,617
Central do.	2,58,238	* 1,116	* 2,59,354
Western do.	4,49,832	..	4,49,832
Total ..	9,84,251	* 18,552	* 10,02,803

* Corrected in the Office of the Chief Engineer for Irrigation.

(Signed) G. D. WYBROW,
Superintending Engineer, I Circle.

B.—STATEMENT showing the Navigation Receipts for the official year 1889-90.

Particulars.	Official year 1888-89.					Official year 1889-90.				
	Class.	Total number.	Measured tonnage licensed at 50 cubic feet per ton	Number of passengers licensed to carry.	Amount of license fees and tolls.	Class.	Total number.	Measured tonnage licensed at 50 cubic feet per ton.	Number of passengers licensed to carry.	Amount of license fees and tolls.
License fees for Government boats ..	..	84	2,456	..	6,140	..	82	2,379	..	5,947
Do. for steamers and dredges ..	..	2	55	..	275	..	2	55	..	275
Do. for staff boats	..	17	..	..	160	..	15	..	..	147
Do. for cargo boats	..	494	12,112	..	26,039	..	590	14,068	..	31,218
Do. for passengar boats ..	1st	..	..	..	..	..	..	..	..	..
Do. for do. ..	B. 2nd	94	1,908	4,718	4,962	2nd	89	1,629	4,125	4,235
Do. for miscellaneous including private or pleasure boats.	..	50	..	..	343	..	47	..	..	361
Tolls on cargo boats	..	..	..	..	29,422	..	..	..	..	27,535
Do. on passenger boats	..	..	..	..	6,136	..	..	..	..	6,973
Do. on miscellaneous	..	..	..	..	94	..	..	..	..	345
Do. on dredges	..	..	..	..	..	..	..	..	..	82
Do. on rafts	..	..	..	..	17,164	..	..	..	..	14,757
Rents collected from staff boats ..	..	..	..	..	2,278	..	..	..	..	2,066
Fees collected for painting numbers on boats	..	..	..	..	224	..	..	..	..	258
Profit on Boat office at end of March 1889 and credited to navigation receipts in accordance with para. 5 of Examiner, Public Works Accounts, No. 1036 S.E., 1st of 26th November 1888	..	..	..	..	..	..	..	..	..	54
Add charges for printing license toll and raft ticket forms treated as refunds from navigation receipts in March 1888 but written back to general contingencies in August 1888 under instructions from the Examiner, Public Works Accounts.	..	..	..	..	149	..	..	..	..	..
Refunds of navigation receipts in the Godávari Eastern division	..	..	..	..	−115	..	..	..	..	..
Total ..	..	741	16,531	4,718	93,271	..	825	18,131	4,125	94,253

C.—STATEMENT showing the total maintenance charges on Navigable Canals of the Godávari Delta for the year 1889-90.

Description.	Total charges for 1889-90.	Debitable to Navigation.		Debitable to Irrigation.	
		Rate.	Amount.	Rate.	Amount.
	RS.		RS.		RS.
Lock establishment	23,182	Whole.	23,182	..	..
Lock and lock weir repairs	17,821	Do.	17,821	..	..
Navigation buildings	988	Do.	988	..	..
Tow-path maintenance	4,580	Do.	4,580	..	..
Dredging	5,679	Do.	5,679	..	..
Share of canal maintenance	(a) 48,545	¼	12,137	¾	36,408
Miscellaneous (including any charges not appertaining to the first six items) general.	(b) 4,861	¼	1,215	¾	3,646
	1,647	Whole.	* 1,647	..	..
Miscellaneous direct	308	Do.	308	..	..
Total ..	1,07,611	..	67,557	..	40,054

* This represents the cost of repairs to staff boats.

(a) This amount includes expenditure on the following works:—

(1) Repairs to canal banks (one-fourth of this is charged to Navigation).
(2) Silt clearance (one-fourth of this is charged to Navigation).
(3) Avenue coolies (one-fourth of this is charged to Navigation).

(b) This item represents expenditure on repairs to masonry works other than locks and weirs (one-fourth of this is charged to Navigation).

(Signed) G. D. WYBROW,
Superintending Engineer, I Circle.

D.—MEMORANDUM showing the offences against Navigation Rules and Regulations during the official year 1889-90.

Nature and description of boats.	Regulation 20 for not having sufficient board.		Regulation 26 for not having masts down when moored in canal and not having a man in charge of boat.		Regulation 27 for not having a light on boat.		Regulation 30 for not keeping boat clean and for not keeping in proper repair.		Regulation 31 for interfering with lock gearings, &c.		Regulation 32 for being overloaded.		Regulation 25 for mooring boat within the limits fixed Notice boards.	
	Boat number.	Number of days stopped.	Boat number.	Number of days stopped.	Boat number.	Number of days stopped.	Boat number.	Number of days stopped.	Boat number.	Number of days stopped.	Boat number.	Number of days stopped.	Boat number.	Number of days stopped.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Passenger boats	362	2	8,903	1	40	2	..	..	24	7	T.T. 4,482	15	25	15
	9,626	2	236	3	T.T. 7,655	15	..	..	..	..	106	3	T.T. 5,777	4
	1,207	2	111	10	T.T. 6,498	15	..	..	..	..	T.T. 5,768	7	T.T. 6,066	5
	T.T. 7,403	7	17	3	..	..	..	..	..	..	93	7	..	..
	T.T. 7,413	7	T.T. 6,066	5	..	..	..	..	..	..	T.T. 8,018	7	..	..
	T.T. 6,359	15	..	..	..	..	..	..	..	..	31 G.	10	..	..
	T.T. 6,476	15	..	..	..	..	..	..	..	..	9 G.	5	..	..
	29 G.	7	..	..	..	..	..	..	..	..	..	..	..	..
Private boats	..	..	..	..	366	10	14 K.	4	..	..	..	..	..	..
Cargo boats	T.T. 6,520	15	207 G.	7	..	..	..	..	341	15	..	..	..	..
	..	..	551 G.	7	..	..	..	..	..	..	..	..	..	..
	..	..	467 G.	3	..	..	..	..	..	..	..	..	..	..
	..	..	181	6	..	..	..	..	..	..	..	..	..	..
	..	..	8,218	7	..	..	..	..	..	..	..	..	..	..
	..	..	7,773	1	..	..	..	..	..	..	..	..	..	..
Rafts	..	..	5,857	Fined each one rupee.	..	..	..	..	..	..	..	..	..	..
	..	..	5,858		..	..	..	..	..	..	..	..	..	..
	..	..	3,616		..	..	..	..	..	..	..	..	..	..
	..	..	3,617		..	..	..	..	..	..	..	..	..	..
	..	..	3,618		..	..	..	..	..	..	..	..	..	..
	..	..	3,619		..	..	..	..	..	..	..	..	..	..
	..	..	3,620		..	..	..	..	..	..	..	..	..	..

D.—Memorandum showing the offences against Navigation Rules and Regulations during the official year 1889-90—*cont.*

Nature and description of boats.	Regulation 24 for repairing vessel in canal without permission.		Regulation 22 for unloading at masonry works.		Regulation 9 for carrying passengers on cargo boat.		Regulation 32 for not having the license on board and not producing it when called for.		Regulation 36 for damaging public works.		Regulation 21 for mooring on the tow-path side.	
	Boat number.	Number of days stopped.	Boat number.	Number of days stopped.	Boat number.	Number of days stopped	Boat number.	Number of days stopped.	Boat number.	Number of days stopped.	Boat number.	Number of days stopped.
	16	17	18	19	20	21	22	23	24	25	26	27
Passenger boats	T.T. 6,776	7	42 G.	5	..	..	40	2	42	7	40	2
	..	..	..	..	..	..	236	3	..	..	30 G.	6
	..	..	..	..	..	..	T.T. 5,623	5	..	..	T.T. 4,787	6
	..	..	..	..	..	..	T.T. 6,066	5	..	..	T.T. 4,783	6
	..	..	..	..	..	..	..	..	..	..	T.T. 4,784	6
	..	..	..	..	..	..	..	..	..	..	33 G.	2
Cargo boats	T.T. 8,350	15	..	..	3,850	4	86 G.	1	..	..	503 G.	10
	..	..	..	..	..	..	T.T. 8,805	8	..	..	T.T. 6,501	15
	..	..	..	..	..	..	..	..	..	..	297 G.	8
	..	..	..	..	..	..	..	..	..	..	208 G.	8
	..	..	..	..	..	..	..	..	..	..	T.T. 6,462	8
	..	..	..	..	..	..	..	..	..	..	5,848 G.	8
	..	..	..	..	..	..	..	..	..	..	T.T. 4,959	8
	..	..	..	..	..	..	..	..	..	..	250 G.	8
	..	..	..	..	..	..	..	..	..	..	213 G.	8
	..	..	..	..	..	..	..	..	..	..	258 G.	8
	..	..	..	..	..	..	..	..	..	..	249 G.	8
	..	..	..	..	..	..	..	..	..	..	298 G.	8
	..	..	..	..	..	..	..	..	..	..	621 G.	8
Rafts	..	..	..	..	..	..	5,879	Fined each one rupee.	..	..	..	..
	..	..	..	..	..	..	5,880		..	..	..	..
	..	..	..	..	..	..	5,881		..	..	..	..
	..	..	..	..	..	..	5,882		..	..	..	..
	..	..	..	..	..	..	5,883		..	..	..	..
	..	..	..	..	..	..	5,894		..	..	..	..
	..	..	..	..	..	..	5,895		..	..	..	..
	..	..	..	..	..	..	5,896		..	..	..	..
	..	..	..	..	..	..	5,897		..	..	..	..
	..	..	..	..	..	..	5,898		..	..	..	..
	..	..	..	..	..	..	5,899		..	..	..	..
	..	..	..	..	..	..	5,900		..	..	..	..

(Signed) G. D. WYBROW,
Superintending Engineer, I Circle.

Office note to the Examiner, Public Works Accounts, dated 1st December 1890, No. 259.
Office note from the „ „ „ „ „ 9th „ „ „ 7284.

No. 194 I.

Submitted to Government. The total receipts shown in statements A and B have been checked by the Examiner of Public Works Accounts and found correct. The fees levied for painting numbers on boats as per accounts rendered to the Examiner amount only to Rs. 86 (Godávari Eastern division Rs. 29, and Godávari Western division Rs. 57) against Rs. 258 shown in the statements. The Superintending Engineer should report the cause of this discrepancy.

CHEPÂK,
13th December 1890.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 19th December 1890, No. 769 I., Public Works.

Communicated to the officers concerned.

2. The Superintending Engineer, I Circle, will see that future returns are submitted more punctually.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, I Circle.
„ Examiner, Public Works Accounts.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 19th.

Recd. *Encl.*

G.O., 19th Dec. 1890, No. 769 I.

DECEMBER.

Navigation Receipts and Charges

Endorsement of the Chief Engineer for Irrigation submitting, with remarks, the annual statements showing the — of the Godávari delta for the official year 1889-90, communicated to the officers concerned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

Telegram from the Secretary to the Government of India, Public Works Department, to the Joint Secretary to the Government of Madras, Public Works Department, Irrigation Branch, dated Calcutta, 18th December 1890, No. A 218.

Your telegram 13th. Additional grant of Rs. 20,000 sanctioned.

Order—dated 19th December 1890, No. 771 I., Public Works.

Communicated to the Superintending Engineer, III Circle, in continuation of G.O., No. 751 I., dated 13th December 1890.

2. The following deferred telegram will be sent to the Superintending Engineer, III Circle :—

" India sanctioned additional grant Rs. 20,000 for Kurnool canal, viz., 15,000 Maintenance Repairs, 3,450 Establishment, 1,550 Tools and Plant."

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, III Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras

PUBLIC WORKS.

Dated December, 19th.

Recd. *Encl.*

G.O., 19th Dec. 1890, No. 771 I.

DECEMBER.

Kurnool Canal

Telegram from the Government of India sanctioning an additional grant of Rupees 20,000 for the —, communicated to the Superintending Engineer, III Circle.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper:—

No. 197 I.

Note by the Chief Engineer for Irrigation.

The preliminary issue of the budget estimates for "43.—Minor Works and Navigation" for next official year (embodying the revised estimates for the current official year) herewith submitted works up to the Provincial grant of Rs. 36·5 lakhs assigned in G.O. No. 152, dated 18th September 1890, Financial Department, communicated with G.O., No. 553 I., dated 1st October 1890, Public Works Department. A sum of Rs. 25,000 is proposed to be spent from "Local Irrigation Cess fund."

2. The budget estimates of receipts to be collected in the Public Works Department and expenditure for 1891-92 compare with the revised and budget estimates for 1890-91 and the actuals of 1889-90 as shown below:—

—	Budget estimate for 1891-92.	Revised estimate for 1890-91.	Budget estimate for 1890-91.	Actuals for 1889-90.
	RS.	RS.	RS.	RS.
Provincial—				
Direct receipts (collected in Public Works Department)	1,25,000	1,25,000	1,12,000	1,23,695
Expenditure	36,50,000	36,50,000	36,50,000	32,42,699
Local Irrigation Cess fund—				
Expenditure	25,000	30,000	41,000	3,699

3. *Provincial—Direct Receipts.*—Both the current year's revised estimate and the ensuing year's budget estimate of "Direct Receipts" are based on the actuals for 1889-90 and are Rs. 13,000 more than the current year's budget estimate which was based on the actuals of 1888-89. The increase is due partly to the development of traffic on the Buckingham canal and partly to increased sales of the produce of plantations on river and canal banks.

4. *Provincial—Expenditure.*—(*a*) The total assignment of Rs. 36·5 lakhs for the ensuing year has been distributed as shown below:—

Irrigation and Navigation Works for which Capital and Revenue Accounts are kept.

	RS.	RS.
Capital Account (see para. 5)	3,21,500	
Revenue Account (see para. 6)	4,32,000	
		7,53,500
Irrigation and Navigation Works for which neither Capital nor Revenue Accounts are kept.		
Old maintenance charges on works for which Capital and Revenue Accounts are kept (see para. 7) ...	3,64,169	
Ordinary "Imperial" works (see para. 8)	10,12,331	
Ordinary "Minor" works under charge of Revenue Department	4,00,000	
Tank restoration works	7,00,000	
		24,76,500
Agricultural works (see para. 11)		4,20,000
Total		36,50,000

(*b*) The works enumerated in the margin which were previously classed under "Irrigation and Navigation Works for which neither Capital nor Revenue Accounts are kept" have in G.O., No. 286 I., dated 21st May 1890, been transferred to the category of works for which Capital and Revenue Accounts are kept.

Kurnool division ..	Cumbum tank.
Coimbatore do. ..	Thadapalli channel.
	Arkencotta do.
	Kalingaroyen do.
Chingleput do. ..	Vallur anicut.
North Arcot division ..	Cheyaur anicut.
	Poiney do.
Tanjore and South Arcot divisions.	Lower Coleroon anicut.
South Arcot division ..	Shatiatope anicut.
	Vriddháchalam anicut.
	Mehamattur do.
	Tirukoilúr do.
Tinnevelly do. ..	Maradur do.

(*c*) The amount proposed for expenditure on Tank restoration works is Rs. 50,000 more than the usual grant of 6½ lakhs. The increase is considered necessary in order that the works may be pushed on with vigorously.

5. *Irrigation and Navigation Works for which Capital and Revenue Accounts are kept—Capital Account.*—The amount proposed for expenditure under this head compares with the sanctioned estimates as shown below:—

Systems.	Amount of estimate.	Probable outlay to end of 1890-91.	BUDGET ESTIMATE FOR 1891-92. Works.	Establishment.	Tools and plant.	Total.	Total.	Balance of estimate.
	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.
Pálár anicut system	18,94,915	18,38,827	38,858	8,937	105	47,900	18,86,727	3,188
Tirukoilúr anicut system ..	36,408	6,150	10,000	2,300	..	12,300	18,450	17,958
Buckingham canal	86,14,000	72,79,993	2,00,000	46,000	3,000	2,49,000	75,28,993	10,85,007
Vedarniem do.	..	..	10,000	2,300	..	12,300	12,300	..
Total ..	..	..	2,58,858	59,537	3,105	3,21,500	..	..

Estimates prepared for improvements to the Vedarniem canal have not yet been sanctioned pending the receipt of a reply to the reference made to the Government of India in letter, No. 475 I., dated 3rd September 1890, regarding the Imperial contribution towards the cost of the execution of the proposed improvements.

6. *Irrigation and Navigation Works for which Capital and Revenue Accounts are kept—Revenue Account.*—The following amounts have been provided under this head:—

Systems.		Extensions and improvements.	Maintenance and repairs.	ESTABLISHMENT. 23 per cent. on expenditure.	10 per cent. on "direct revenue."	Tools and plant.	Total.
		RS.	RS.	RS.	RS.	RS.	RS.
Kurnool ..	Cumbum tank	..	2,317	533	..	..	2,850
Coimbatore ..	Thadapalli channel	..	3,984	916	..	..	4,900
Do. ..	Arkencotta do.	..	2,033	467	..	..	2,500
Do. ..	Kalingaroyen do.	..	4,471	1,029	..	..	5,500
Chingleput ..	Chembrambakam tank ..	— 2,287	1,403	— 202	5	— 109	— 1,190
Do. ..	Madras water-supply and irrigation extension	— 3,477	3,794	73	1,220	— 10	1,600
Do. ..	Vallur anicut	..	504	116	..	..	620
Do. ..	Pálár anicut	1,276	6,000	1,674	50	..	9,000
North Arcot ..	Do.	12,201	47,091	13,637	75	— 4	73,000
Do. ..	Poiney anicut	5,317	15,000	4,673	10	..	25,000
Do. ..	Cheyaur do.	5,317	15,000	4,673	10	..	25,000
South Arcot ..	Pelandorai anicut	6,941	9,317	3,739	5	— 2	20,000
Do. ..	Shatiatope do.	7,824	10,000	4,100	76	..	22,000
Do. ..	Vriddháchalam anicut ..	3,000	3,097	1,402	1	..	75,000
Do. ..	Mehamattur anicut	984	3,000	916	..	..	4,900
Do. ..	Tirukoilúr do.	3,215	13,000	3,730	55	..	20,000
Do. ..	Lower Coleroon anicut ..	24,766	15,000	9,146	88	..	49,000
Tanjore ..	Do. do. ..	8,740	3,850	2,895	15	..	15,500
Tinnevelly ..	Maradur anicut	1,000	5,049	1,391	60	..	7,500
Ganjam ..	Chilka Lake canal	..	504	116	..	..	620
Godávari Eastern	Dumagudiem do.	..	12,171	2,799	30	..	15,000
Buckingham Canal Division.	Buckingham do.	5,000	80,300	19,619	8,100	1,981	1,15,000
Negapatam ..	Vedarniem do.	..	4,976	1,144	80	..	6,200
	Total ..	79,817	2,61,861	78,586	9,880	1,856	4,32,000

The *minus* figures represent the sums by which the amounts required are less than the old maintenance charges separately provided for under "Irrigation and Navigation Works for which neither Capital nor Revenue Accounts are kept."

The amounts applied for by the Superintending Engineers concerned for the Pálár and Pelandorai anicut systems under "Extensions and Improvements" and for the Maradur anicut under both "Extensions and Improvements" and "Maintenance and Repairs" are considered to be more than required and have consequently been reduced.

Under "Extensions and Improvements" funds have been provided for the following works estimated to cost above Rs. 2,500 each :—

	Amount provided.
	RS.
North Arcot—	
No. 1. Cheyaur anicut, screw-gearing shutters	5,317
South Arcot—	
No. 2. Pelandorai anicut, fixing shutters	5,000
„ 3. Shatiatope do. north channel extension	6,000
„ 4. Lower Coleroon anicut, Vadavar head sluice	10,000
„ 5. Chidambaram drainage scheme	10,000

The estimates for work No. 1 have been generally approved,* but returned to the Superintending Engineer for a few alterations in detail. The estimates for works Nos. 2 and 4 are in this office and will be dealt with shortly. The Superintending Engineer, V Circle, should submit the estimates for works Nos. 3 and 5 without delay.

* Memo. No. V/47 N.A., dated 29th October 1890.

The Superintending Engineer, VI Circle, has applied for Rs. 8,200 for improving the Kunikimaniyar channel which takes off from the Lower Coleroon anicut in the Tanjore division. The estimate for this work received from Superintending Engineer has been returned to him as it appeared that the advisability of part of the expenditure proposed was contingent on a scheme for supplying water to the Vickramanaur from the Kunikimaniyar, which has not yet been investigated. A sum of Rs. 8,740 has, however, been provided for the Lower Coleroon anicut system in the Tanjore division under "Extensions and Improvements" for such works as may be sanctioned hereafter.

7. *Irrigation and Navigation Works for which neither Capital nor Revenue Accounts are kept—Old Maintenance Charges.*—The sum provided under this head is that fixed in G.Os., Nos. 395 I. and 484 I., dated 18th July and 4th September 1890, respectively.

8. "*Ordinary*" "*Imperial Works.*"—The allotments proposed under this head are compared below with the current year's grants :—

	1891-92.	1890-91.
	RS.	RS.
Original works—major	2,22,394	1,72,037
Do. minor (see statement A)	1,60,000	1,36,266
Repairs	4,30,000	3,77,277
Establishment at 23 per cent. on expenditure ...	1,86,850	1,57,225
Do. at 10 do. on "direct revenue"	900	1,000
Tools and plant at 1⅓ do. on expenditure ...	12,187	10,254
Total ...	10,12,331	8,52,059

The amounts proposed for next year are more than the current year's grants, which were reduced to meet the demands under other heads.

Under Original Works, Major, funds have been provided for the following works.

	Amount provided.
	RS.
Vizagapatam—	
1. Pulaparty channel embankment	3,000
Nellore—	
2. Griddalore tank—restoring	10,000
3. Terumerla tank improvements	4,000
4. Vedavalur tank do.	5,000
5. Pumbleru dam, improvements to channel	6,000
6. Madamanur tank improvements	10,000
7. Paka new tank	5,000
8. Allur tank improvements	10,000
Bellary—	
9. Singanamala tank improvements	5,000
10. Roya channel improvements	12,000
11. Mudigubba tank improvements	7,000
Coimbatore—	
12. Mangamari weir—scouring sluices	6,130
Salem—	
13. Sangambasavan tank improvements	12,000
West Coast—	
14. Enamakal dam, revetment to western slope and repacking to the face stone	1,940
Chingleput—	
15. Utramallur tank improvements	7,424
16. Do. head sluice	19,000
17. Kattur madugu weir	9,800
South Arcot—	
18. Vylamore large tank improvements	1,000
19. Gadilam river—Vanamadevi anicut main channel, masonry works	7,100
20. Sengal odai anicut and head sluice	6,000
Trichinopoly—	
21. Nundiar channel extension	10,000
Madura—	
22. Uthamuth anicut improvements	10,000
23. Kottur anicut improvements	8,000
Tinnevelly—	
24. Vasudevanallur Periakulam tank improvements	1,900
25. Kumarasawmy Pillay anicut, restoring	8,600
26. Meelapatam Kariselkulam improvements	2,000
27. Senthamani Periakulam tank improvements	3,000
28. Pallikotai channel and Pullamanudi tank improvements ...	10,000
29. Swalaperi channel improvements	5,000
30. Parancheri channel do.	3,000
31. Satturam Puthukulam, diversion of supply channel	3,000
32. Gengaikonda Serukulam improvements	2,000
33. Allappacheri tank improvements	2,500
34. Pulliyarkullam tank do.	2,000
35. Kollakondam kullam do.	2,000
36. Elandara kondam tank do.	2,000
Total ...	2,22,394

For works Nos. 2 to 11, 16, 21, 23, 27, 34, 35 and 36 funds have been provided in anticipation of sanction to the estimates. Estimates for works Nos. 2, 11 and 23 have been received in this office and will be disposed of shortly; for the other works provided for in anticipation of sanction the Superintending Engineers concerned should see that estimates are submitted for sanction without delay.

The distribution by divisions of the grants proposed for expenditure on minor original works and repairs is shown in statement A attached to this note.

9. "*Minor*" *Irrigation Works.*—The amount provided for expenditure on "Minor" Irrigation works under the charge of the Revenue Department is 4 lakhs as in the current year.

10. *Tank Restoration Works.*—The amount of Rs. 7 lakhs provided for expenditure on Tank restoration works has been distributed as shown below :—

—	Investigation.				Execution.						Total.	Amount of sanctioned estimates which will be available for execution on 1st April 1891.
	Works.	Establishment.	Tools and plant.	Total.	Original works. Major.	Original works. Minor.	Repairs.	Establishment.	Tools and plant.	Total.		
	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.
Central office	2,588	10,250	320	13,158	..	..	..	..	..	..	13,158	..
Vizagapatam	2,472	2,000	..	4,472	..	3,000	5,000	1,840	120	9,960	14,432	11,743
Godávari Eastern	..	..	..	..	..	2,000	2,000	920	60	4,980	4,980	4,128
Do. Western	..	..	..	..	..	2,800	7,000	2,254	147	12,201	12,201	9,570
Kistna do.	7,104	13,680	..	20,784	..	1,200	3,000	966	63	5,229	26,013	..
Cuddapah	..	..	..	..	..	1,000	1,500	575	37	3,112	3,112	2,435
Kurnool	..	..	..	..	..	8,000	15,000	5,290	345	28,635	28,635	23,408
Bellary	..	..	..	..	6,157	2,000	6,000	3,256	212	17,625	17,625	8,831
Salem	3,624	16,750	..	20,374	..	15,000	25,000	9,200	600	49,800	70,174	71,463
Coimbatore	..	..	..	..	..	10,000	17,500	6,325	413	34,238	34,238	40,450
North Arcot	..	..	..	..	..	35, 00	60,000	21,850	1,425	1,18,275	1,18,275	1,62,919
Chingleput	..	..	..	..	..	35,000	70,000	24,150	1,575	1,30,725	1,30,725	2,38,669
South Arcot	4,104	2,950	..	7,054	..	10,000	30,000	9,200	600	49,800	56,854	1,05,106
Madura	3,384	14,500	..	17,884	..	40,000	45,000	19,550	1,275	1,05,825	1,23,709	1,83,265
Tinnevelly	3,624	3,650	..	7,274	1,000	10,000	20,000	7,130	465	38,595	45,869	29,923
Total ..	26,900	63,780	320	91,000	7,157	1,75,000	3,07,000	1,12,506	7,337	6,09,000	7,00,000	8,91,910

Funds have been provided for the following Major Original Works :—

	Amount provided.
	RS.
Bellary division—	
Royalcheruvu tank improvements	6,157
Tinnevelly—	
Srívilliputur Periakulam, reconstructing sluices, &c.	1,000

The programme of tank restoration scheme for next year will be submitted separately.

11. *Agricultural Works.*—The distribution of the amount of Rs. 4,20,000 proposed for expenditure on agricultural works during next year compares as follows with the current year's grants :—

	1891-92.	1890-91.
	RS.	RS.
Original works—major	85,968	1,91,850
Do. minor	15,000	18,085
Repairs	2,35,000	2,47,794
Establishment at 23 per cent. on expenditure ...	77,273	1,03,624
Do. at 10 do. on direct revenue ...	1,720	1,720
Tools and plant at $1\frac{1}{2}$ do. on expenditure ...	5,039	6,759
Total ...	4,20,000	5,69,832

The "Major" Original works for which funds have been provided are enumerated in part I of the budget estimates. The Superintending Engineer, II Circle, should see that the estimate for completing the left embankment of the Kistna river in the first reach of the Bank canal in the Kistna Eastern division, for which funds have been provided in anticipation of sanction, is submitted without delay.

The distribution of the grant for minor original works and repairs is shown in the statement B attached to this note.

12. *Expenditure from Local Irrigation Cess Fund.*—The current year's revised estimate of expenditure (Rs. 30,000) under this head is Rs. 11,000 less than the budget estimate, the Superintending Engineer, IV Circle, having surrendered the amount from the grant for the Coimbatore district, as, until the estimates for improving the Kalingaroyen channel submitted to the Government of India with Proceedings of Madras Government, No. 519 I., dated 16th September 1890, are sanctioned, the question of whether Irrigation Cess funds should be spent on improving the sluices of this channel or not, cannot be settled.

The budget estimate of Rs. 25,000 for the ensuing year is distributed as shown below :—

	RS.
Salem—	
Cauvery channels	5,000
Coimbatore—	
Thadapalli channels	5,000
Bellary—	
Tungabhadra channels	15,000
Total ...	25,000

The Superintending Engineers, III and IV Circles, should see that early arrangements are made for utilizing fully the grants from this fund.

13. The total grants for *works* and *repairs* under 43. "Minor Works and Navigation" and the contribution from the assignment under this head to "45. Civil

Works" on account of establishment and tools and plant charges for 1890-91 and 1891-92 are shown below :—

	1891-92.	1890-91.
	RS.	RS.
Total grant for works and repairs	28,43,184	28,47,441
Establishment, 23 per cent. on expenditure ...	5,49,992	5,55,006
Do. 10 do. on "direct revenue" ...	12,500	12,500
Do. 6 do. on "indirect revenue"	1,73,830	1,73,830
Do. special establishment	63,780	57,500
Total, Establishment ...	8,00,102	7,98,836
Percentage on the grant for works and repairs ...	28·2	28·1
Tools and plant, 1½ per cent. on expenditure ...	24,563	24,630

CHEPÂK,
16th December 1890.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

To the Joint Secretary to Government,
Public Works Department, Irrigation Branch.

A.—IRRIGATION AND NAVIGATION WORKS FOR WHICH NEITHER CAPITAL NOR REVENUE ACCOUNTS ARE KEPT, EXCLUSIVE OF "MINOR" WORKS UNDER CHARGE OF THE REVENUE DEPARTMENT.

STATEMENT showing the proposed grants for Original Works under Rs. 2,500 each and Repairs for 1891-92.

Divisions.	Irrigation revenue for 1889-90.	Grant proposed for 1891-92.	
		Original Works (under Rs. 2,500 each).	Repairs.
	RS.	RS.	RS.
Ganjam	1,82,493	4,000	10,000
Vizagapatam	93,681	3,500	6,000
Godâvari Eastern	74,936	3,000	15,000
Do. Western		2,500	5,000
Kistna Eastern	14,990	5,000	7,000
Nellore	2,61,793	15,000	40,000
Cuddapah	2,67,973	5,000	30,000
Kurnool	1,16,121	1,000	2,000
Bellary	3,79,832	10,000	40,000
Coimbatore	5,26,818	3,000	19,000
Salem	1,01,227	3,500	15,000
West Coast	...	...	2,000
Chingleput	5,20,248	10,000	50,000
North Arcot	3,70,825	10,000	20,000
South Arcot	6,68,290	17,000	64,000
Tanjore	93,890	1,400	1,000
Negapatam		3,000	4,000
Trichinopoly	2,89,765	5,000	35,000
Madura	3,08,011	3,000	10,000
Tinnevelly	9,08,375	10,500	35,000
Total ...	51,89,268	1,25,000	4,30,000
Reserve ...	..	35,000	...
Total ...	51,89,268	1,60,000	4,30,000

B.—AGRICULTURAL WORKS.

STATEMENT showing the grants proposed for Original Works below Rs. 2,500 each and Repairs for 1891-92.

Divisions.	Amount proposed for 1891-92. Minor Original Works.	Repairs.
	RS.	RS.
River Conservancy—		
Vizagapatam	...	1,000
Godávari Eastern	...	10,000
Do. Western	...	13,000
Kistna Eastern	...	3,000
Do. Western	...	5,000
Nellore	1,000	2,000
Cuddapah	...	3,000
Salem	...	630
Coimbatore	2,000	5,370
North Arcot	...	600
South Arcot	...	3,000
Tanjore	...	25,000
Negapatam	...	12,000
Trichinopoly	...	10,000
Total ...	3,000	93,600
River Embankment—		
Rushikulya	...	1,000
Ganjam	...	3,000
Vizagapatam	500	2,500
Godávari Eastern	...	8,000
Do. Western	500	17,000
Kistna Eastern	...	7,000
Do. Western	...	8,000
Nellore	1,000	16,000
Cuddapah	...	3,000
Coimbatore	1,500	4,000
Chingleput	1,000	5,000
North Arcot	500	2,400
South Arcot	500	5,000
Tanjore	1,000	20,000
Negapatam	...	25,000
Trichinopoly	500	12,000
Tinnevelly	2,000	2,000
Total ...	9,000	1,40,900
Drainages—		
Trichinopoly	...	500
Total ...	...	500
Miscellaneous—		
Coimbatore	800	...
Salem	200	...
Total ...	1,000	...
Reserve ...	2,000	...
Total, Agricultural Works ...	15,000	2,35,000

CHEPÂK,
16th December 1890.

(Signed) G. T. WALCH,
Chief Engineer for Irrigation.

ORDER—dated 23rd December 1890, No. 775 I., Public Works.

The budget estimates for "43.—Minor Works and Navigation" for 1891-92, embodying the revised estimates for 1890-91, as drawn up by the Chief Engineer for Irrigation, are approved and will be submitted to the Government of India. The distribution by divisions of the grants for "Minor Original Works" and "Repairs" proposed by him is also approved.

2. The sum of Rs. 4 lakhs provided for expenditure on repairs to "Minor" Irrigation works under the charge of the Revenue Department during next year will be placed at the disposal of the Board of Revenue for early appropriation to districts.

3. The Superintending Engineers concerned will expedite the submission of estimates for works for which funds have been provided in anticipation of sanction.

4. Ordered that the following letter be sent to the Government of India.

(Here enter No. 776 I., dated 23rd December 1890.)

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
To Superintending Engineers.
To the Superintendent of Works, Periyár Project.
" Examiner, Public Works Accounts.
" Revenue Department.
" Financial do.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 23rd.

Recd. *Encl.*

G.O., 23rd Dec. 1890, No. 775 I.

DECEMBER.

Budget Estimates for 1891-92 under 43. Minor Works and Navigation

Orders circulating the preliminary issue of the —.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Letter—from

G. T. WALCH, Esq.,
Joint Secretary to the Government of Madras,
Public Works Department,
Irrigation Branch,

To

The SECRETARY to the GOVERNMENT of INDIA,
Public Works Department.

Sir,

In forwarding a copy of Proceedings of Madras Government, No. 775 I., dated 23rd December 1890, together with the preliminary issue of the budget estimates of the Irrigation Branch for " 43.—Minor Works and Navigation " for 1891-92, I am directed to request that the approval of the Government of India thereto may be communicated at an early date.

I have the honor to be,
Sir,
Your most obedient servant,

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

Fort St. George,
23rd December 1890.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 23rd.

Recd. *Encl.*

23rd Dec. 1890, No. 776 I.

DECEMBER.

Budget Estimates for 1891-92 under 43. Minor Works and Navigation

Forwarding the preliminary issue of the —.

PRELIMINARY ISSUE.

IRRIGATION—MINOR WORKS AND NAVIGATION.

MADRAS PRESIDENCY.

PUBLIC WORKS DEPARTMENT.

BUDGET ESTIMATE

OF

IRRIGATION MINOR WORKS AND NAVIGATION,

IN THE

MADRAS PRESIDENCY,

FOR THE YEAR

1891-92.

23rd December 1890.

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

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REVENUE.

BUDGET ESTIMATE OF REVENUE FROM IRRIGATION MINOR WORKS AND NAVIGATION IN THE MADRAS PRESIDENCY FOR THE YEAR FROM 1ST APRIL 1891 TO 31ST MARCH 1892.

	Budget Estimate, 1891-92.	Revised Estimate, 1890-91.	Budget Estimate, 1890-91.	Actual Realizations, 1889-90.
	Rs.	Rs.	Rs.	Rs.
Provincial.				
Irrigation and Navigation Works.				
Works for which Capital and Revenue Accounts are kept.				
Chembrambakam Tank System	50	100	115	28
Madras Water-supply and Irrigation Extension	12,200	12,000	12,000	11,738
Pálár Anicut System	1,250	1,300	1,300	979
Poiney Anicut System	100	100	...	...
Cheyár Anicut System	100	100	...	...
Pelandorai Anicut System	50	150	150	...
Shatiatope Anicut System	760	760	...	...
Vriddháchalam Anicut System	5	10	...	...
Mehamattur Anicut System	5	...	...	...
Tirukoilúr Anicut System	550	550	...	...
Lower Coleroon Anicut System	1,030	1,030	...	...
Muradur Anicut System	600	600	...	...
Dumagudiem Canal	300	300	...	...
Buckingham Canal	81,000	80,000	75,000	78,808
Vedarniem Canal	800	800	...	648
Total ..	98,800	97,800	88,565	92,201
Works for which neither Capital nor Revenue Accounts are kept ...	9,000	10,000	12,750	14,120
Agricultural Works.				
Works for which neither Capital nor Revenue Accounts are kept ...	17,200	17,200	10,685	17,374
TOTAL ..	1,25,000	1,25,000	1,12,000	1,23,695

CHARGES.

ABSTRACT BUDGET ESTIMATE OF EXPENDITURE ON IRRIGATION MINOR WORKS AND NAVIGATION IN THE MADRAS PRESIDENCY FOR THE YEAR FROM 1ST APRIL 1891 TO 31ST MARCH 1892.

		Reference to Detailed Estimate.	Budget Estimate, 1891-92.	Revised Estimate, 1890-91.	Budget Estimate, 1890-91.	Actual Outlay, 1889-90.
PROVINCIAL.		Pages.	Rs.	Rs.	Rs.	Rs.
Irrigation and Navigation Works for which Capital and Revenue Accounts are kept.						
Capital.	Rs.					
I.—Works ... In progress	2,46,558	...	2,58,858	2,56,135	2,44,894	2,33,065
Not commenced ...	12,300					
II.—Establishment		...	59,537	57,932	56,211	56,729
III.—Tools and Plant		...	3,105	3,895	3,895	5,594
Receipts on Capital Account		...	...	...	...	— 107
Total, Capital ...		...	3,21,500	3,17,962	3,05,000	2,95,281
Revenue.	Rs.					
I.—Extensions and Improvements. In progress	...	...	79,817	56,684	13,835	38,907
Not commenced	79,817					
II.—Maintenance and Repairs		...	2,61,861	3,09,375	1,56,955	1,90,259
III.—Establishment		...	88,466	93,974	48,139	61,917
IV.—Tools and Plant		...	1,856	2,330	2,221	2,428
Total, Revenue ...		...	4,32,000	4,62,363	2,21,150	2,93,511
Total Works for which Capital and Revenue Accounts are kept		...	7,53,500	7,80,325	5,26,150	5,88,792
Irrigation and Navigation Works for which neither Capital nor Revenue Accounts are kept.						
I.—Works—	Rs.					
Major ... In progress ...	76,121	...	2,29,551	2,04,496	1,11,404	1,52,867
Not commenced ...	1,53,430					
Minor		...	3,72,281	3,37,849	4,15,884	2,69,460
II.—Repairs		...	12,79,850	11,95,173	15,16,778	12,18,775
III.—Establishment		...	5,73,106	5,41,586	6,04,491	5,45,334
IV.—Tools and Plant		...	21,712	20,739	25,293	19,428
Total Works for which neither Capital nor Revenue Accounts are kept.		...	24,76,500	22,99,843	26,73,850	22,05,864
Total, Irrigation and Navigation Works ...		...	32,30,000	30,80,168	32,00,000	27,94,656
Agricultural Works.						
Works for which neither Capital nor Revenue Accounts are kept.						
I.—Works—	Rs.					
Major ... In progress	67,508	...	85,968	1,91,850	1,40,087	1,39,188
Not commenced	18,460					
Minor		...	15,000	18,085	13,500	9,816
II.—Repairs		...	2,35,000	2,47,794	2,07,000	2,09,389
III.—Establishment		...	78,993	1,05,344	84,003	80,869
IV.—Tools and Plant		...	5,039	6,759	5,410	5,160
Total, Agricultural Works ...		...	4,20,000	5,69,832	4,50,000	4,44,422
Total, Provincial ...		...	36,50,000	36,50,000	36,50,000	32,39,078

CHARGES.

ABSTRACT BUDGET ESTIMATE OF EXPENDITURE ON IRRIGATION MINOR WORKS AND NAVIGATION IN THE MADRAS PRESIDENCY FOR THE YEAR FROM 1ST APRIL 1891 TO 31ST MARCH 1892—continued.

	Reference to Detailed Estimate.	Budget Estimate, 1891-92.	Revised Estimate, 1890-91.	Budget Estimate, 1890-91.	Actual Outlay, 1889-90.
	Pages.	Rs.	Rs.	Rs.	Rs.
GRAND TOTAL, PROVINCIAL 43. MINOR WORKS AND NAVIGATION.					
Works ... In progress ... ... Rs. 3,90,187; Not commenced 6,51,288	...	10,41,475	10,65,099	9,39,604	8,43,303
Repairs	...	17,76,711	17,52,342	18,80,733	16,18,423
Establishment	...	8,00,102	7,98,836	7,92,844	7,44,849
Tools and Plant	...	31,712	33,723	36,819	32,610
Receipts on Capital Account	...	...	...	...	107
Total ...	...	36,50,000	36,50,000	36,50,000	32,39,078
LOCAL IRRIGATION CESS FUND.					
43. Minor Works and Navigation—Original Works.	...	25,000	30,000	41,000	3,699

CHARGES.

PART I.

BUDGET ESTIMATE OF EXPENDITURE ON IRRIGATION MINOR WORKS AND NAVIGATION IN THE MADRAS PRESIDENCY FOR THE YEAR 1891-92, ARRANGED BY PROJECTS AND OBJECTS OF WORK.

	Amount of Sanctioned Estimate.	Actual Outlay to end of 1889-90.	Budget Estimate, 1890-91.	Probable Outlay during 1890-91 (Revised Estimate).	Budget Estimate, 1891-92.	Remarks and References.
	Rs.	Rs.	Rs.	Rs.	Rs.	
PROVINCIAL.						
43. Minor Works and Navigation.						
Irrigation and Navigation Works for which Capital and Revenue Accounts are kept.						
Capital.						
Works in Progress.						
Pálár Anicut System	18,94,915	17,91,006	50,000	47,821	47,900	Government of India Register No. 17 I. of 1884-85. *Vide* P.M.G., No. 85 I., dated 29th January 1886.
Tirukoilúr Anicut System ...	...	...	...	6,150	12,300	P.M.G., No. 891 I., of 16th July 1890.
Buckingham Canal	86,14,000	70,24,993	2,55,000	2,55,000	2,49,000	Government of India Register No. 15 I. of 1883-84. P.M.G., No. 625 I., dated 9th August 1883, and No. 195 I., dated 16th February 1884.
Vedarniem Canal	...	...	...	...	12,300	
Other Projects	...	...	...	8,991	...	
Total, Capital ..	...	...	...	3,17,962	3,21,500	
Revenue.						
Cumbum Tank System ...	...	...	...	369	2,850	
Thadapalli Channel System ...	...	...	...	10,442	4,900	
Arkencota do. do. ...	...	...	...	2,483	2,500	
Kalingaroyen do. do. ...	...	...	...	5,535	5,500	
Chembrambakam Tank System.	...	...	500	4,806	— 1,190	
Madras Water-supply and Irrigation Extension.	...	...	800	5,585	1,600	
Vallúr Anicut System	...	...	...	...	620	
Pálár do. do.	...	...	71,300	94,640	82,000	
Poiney do. do.	...	...	...	21,535	25,000	
Cheyár do. do.	...	...	...	28,915	25,000	
Pelandorai Anicut System ...	...	...	13,000	14,014	20,000	
Shatiatope do. do. ...	...	...	...	30,211	22,000	
Vriddháchalam Anicut System ..	...	...	...	15,991	7,500	
Mehamattur do. do. ...	...	...	...	5,535	4,900	
Tirukoilúr do. do. ...	...	...	...	14,200	20,000	
Lower Coleroon do. do. ...	...	...	...	33,259	64,500	
Marudur do. do. ...	...	...	...	21,399	7,500	
Chilka Lake Canal	...	...	400	6,878	620	
Dumagudiem do.	...	...	15,000	13,536	15,000	
Buckingham do.	...	...	1,14,000	1,26,800	1,15,000	
Vedarniem do.	...	...	6,150	6,230	6,200	
Total, Revenue ..	...	...	...	4,62,363	4,32,000	
Total, Irrigation and Navigation Works for which Capital and Revenue Accounts are kept	...	...	5,26,150	7,80,325	7,53,500	

CHARGES.

PART I—continued.

BUDGET ESTIMATE OF EXPENDITURE ON IRRIGATION MINOR WORKS AND NAVIGATION IN THE MADRAS PRESIDENCY FOR THE YEAR 1891-92, ARRANGED BY PROJECTS AND OBJECTS OF WORK—continued.

	Amount of Sanctioned Estimate.	Actual Outlay to end of 1889-90.	Budget Estimate, 1890-91.	Probable Outlay during 1890-91 (Revised Estimate).	Budget Estimate, 1891-92.	Remarks and References.
PROVINCIAL—continued.						
43. Minor Works and Navigation.—cont.	Rs.	Rs.	Rs.	Rs.	Rs.	
Irrigation and Navigation Works for which neither Capital nor Revenue Accounts are kept.						
Works in progress / Works not commenced } —						
Old maintenance charges ...	...	...	3,64,000	3,64,169	3,64,169	
Ordinary "Imperial" works.	...	...	12,59,850	8,52,059	10,12,331	
Ordinary "Minor" works.	...	...	4,00,000	4,00,000	4,00,000	
Tank Restoration Works—						
Investigation	...	...	83,000	83,000	91,000	
Execution	...	...	5,67,000	6,00,615	6,09,000	
Total ...	...	...	26,73,850	22,99,843	24,76,500	
Total, Irrigation and Navigation Works	...	..	32,00,000	30,80,168	32,30,000	
Agricultural Works.						
Works for which neither Capital nor Revenue Accounts are kept.						
Major Original Works.						
In Progress.						
Godávari left bank, Purushothapatam to Rajahmundry, raising.	14,350	3,586	...	...	10,158	P.M.G., No. 394 I., of 18th July 1890.
Gowtami Godávari left bank from Rajahmundry to Yanam, raising.	45,000	13,217	10,000	10,000	10,000	P.M.G., No. 350 I., of 14th June 1888.
Kistna river left bank first reach of the Bank canal, completing.	13,680	5,006	...	3,902	4,772	Estimate will be submitted shortly.
Malatar channel extension ...	9,600	5,295	2,281	2,305	2,000	P.M.G., No. 188 I., of 10th April 1889.
Coleroon right bank from Road No. 4 to Lower Coleroon anicut, raising and widening.	1,14,000	87,540	10,000	10,000	10,000	P.M.G., No. 881 I., of 16th October 1885.
Cauvery and its branches, fixing mile and furlong stones.	7,500	4,727	1,000	1,000	1,778	P.M.G., No. 688 I., of 12th October 1889.
Vetár river right bank, 82 miles 5 furlongs and 82 miles 6 furlongs and left bank, 81 miles 2 furlongs. Straight cut Thiagarajapuram Pullivilagaram limits.	9,490	...	6,687	6,687	2,800	P.M.G., No. 512 I., of 21st October 1889.
Agunda Cauvery right bank from Amarávati junction to Vyacondam head sluice.	23,000	...	10,000	10,000	8,000	P.M.G., No. 439 I., of 13th August 1890.
Coleroon left bank raising and strengthening below bridge to Nundiyaur anicut.	82,300	27,462	...	15,000	10,000	P.M.G., No. 557 I., of 7th October 1890.
Támbraparni river left bank from $11\frac{1}{4}$ to $12\frac{3}{4}$ miles below Srívaikuntham anicut, near Mukkani village.	16,000	...	8,000	8,000	8,000	P.M.G., No. 574 I., of 29th November 1889.

CHARGES.

PART I—continued.

BUDGET ESTIMATE OF EXPENDITURE ON IRRIGATION MINOR WORKS AND NAVIGATION IN THE MADRAS PRESIDENCY FOR THE YEAR 1891-92, ARRANGED BY PROJECTS AND OBJECTS OF WORK—continued.

	Amount of Sanctioned Estimate.	Actual Outlay to end of 1889-90.	Budget Estimate, 1890-91.	Probable Outlay during 1890-91 (Revised Estimate).	Budget Estimate, 1891-92.	Remarks and References.
	Rs.	Rs.	Rs.	Rs.	Rs.	
PROVINCIAL—continued.						
Agricultural Works—continued.						
Works for which neither Capital nor Revenue Accounts are kept—continued.						
MAJOR ORIGINAL WORKS—cont.						
Works not commenced.						
Narayanavaram, river embankment, demarcating land required for—	4,260	...	...	...	4,260	P.M.G., No. 448 I., of 20th August 1890.
Corayar straight cut between Corayar head works and railway bridge near Nidamangalam.	11,200	...	...	...	11,200	P.M.G., No. 241 I., of 22nd April 1890.
Corayar 71 miles straight cut in Athengudi limits.	3,150	...	...	...	3,000	P.M.G., No. 760 I., of 17th December 1890.
Total, Major Original Works ...	...	...	...	...	85,968	
Minor Original Works	...	...	...	...	15,000	
Repairs	...	...	...	...	2,35,000	
Establishment	...	...	...	...	78,993	
Tools and Plant	...	...	...	...	5,039	
Total, Agricultural Works ...	...	...	...	...	4,20,000	
Total, Provincial ...	...	...	...	...	36,50,000	
LOCAL IRRIGATION CESS FUND.						
43. MINOR WORKS AND NAVIGATION	...	...	41,000	30,000	25,000	

CHARGES.

PART I—continued.

ABSTRACT OF CHARGES TO BE INCURRED FROM IMPERIAL AND PROVINCIAL FUNDS.

	Budget Estimate, 1891-92.							Revised Estimate, 1890-91.	Budget Estimate, 1890-91.	Actual Outlay in 1889-90.
	Works			Repairs.	Establishment.	Tools and Plant.	Total.			
	In progress.	Not commenced.	Total.							
IRRIGATION.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
43. MINOR WORKS AND NAVIGATION.										
Provincial.										
In India	3,90,187	6,51,288	10,41,475	17,76,711	8,00,102	31,712	36,50,000	36,50,000	36,50,000	32,39,078
In England	...	...	...	...	...	...	...	...	...	...
Total ...	3,90,187	6,51,288	10,41,475	17,76,711	8,00,102	31,712	36,50,000	36,50,000	36,50,000	32,39,078
Imperial.										
In India	...	...	...	...	...	...	...	...	...	...
Local Irrigation Cess Fund.										
In India	...	...	25,000	...	...	...	25,000	30,000	41,000	3,699

BUDGET ESTIMATE OF EXPENDITURE IN ENGLAND ON IRRIGATION MINOR WORKS AND NAVIGATION IN THE MADRAS PRESIDENCY FOR THE YEAR 1891-92, ARRANGED BY PROJECTS AND OBJECTS OF WORK.—*Nil.*

CHARGES.

PART IV.

DETAIL OF THE BUDGET ESTIMATE OF ESTABLISHMENT CHARGES FOR THE YEAR 1891-92.

Number.		Particulars.	Rate of salary.	Budget Estimate for 1891-92.			Revised Estimate for 1890-91.
1890-91.	1891-92.			Per mensem.	Per annum.	Total.	
			Rs.	Rs.	Rs.	Rs.	Rs.
		IRRIGATION.					
		43. Minor Works and Navigation.					
		PROVINCIAL.					
		Grant for works and repairs	...	...	...	28,18,186	28,17,441
		Deduct items on which no charge for establishment is admissible—					
		Grant for land compensation	...	...	...	...	11,451
		Grant for Survey establishment of Tank Restoration parties	...	...	...	26,900	24,500
		Grant for repairs to "Minor" Irrigation Works under the charge of Collectors ...	...	...	...	4,00,000	3,68,421
		Total Deductions ...	...	...	...	4,26,900	4,04,372
		Net Grant for Works and Repairs ...	...	...	...	23,91,286	24,13,069
		A. Share of the Public Works establishment charges at 23 per cent. on the net grant for works and repairs	...	...	...	5,49,992	5,55,006
		Estimate of Direct Revenue	...	...	...	1,25,000	1,25,000
		B. Share of the Public Works establishment charges at 10 per cent. on Direct Revenue.	...	...	...	12,500	12,500
		Revenue due to old Irrigation under Major Works	...	...	...	28,97,000	28,97,000
		C. Share of the Public Works establishment at 6 per cent. on Revenue	...	...	...	1,73,830	1,73,830
		Total, A + B + C ...	...	...	...	7,36,322	7,41,336
		Special Establishment for investigating requirements of Tanks systematically.					
		ATTACHED TO THE OFFICE OF THE CHIEF ENGINEER FOR IRRIGATION.					
1	1	Clerk	170	170			
1	1	Do.	96	96			
1	1	Do.	38	38			
1	1	Do.	32	32			
2	1	Do.	24	24			
	1	Do.	17	17			
3	4	Clerks	12	48			
1	1	Draughtsman	96	100			
1	1	Do.	66	66			
1	1	Do.	40	40			
2	1	Do.	38	40			
	1	Do.	25	25			

CHARGES.

PART IV—continued.

DETAIL OF THE BUDGET ESTIMATE OF ESTABLISHMENT CHARGES FOR THE YEAR 1891-92—cont.

Number. 1890-91.	Number. 1891-92.	Particulars.	Rate of salary.	Budget Estimate for 1891-92. Per mensem.	Budget Estimate for 1891-92. Per annum.	Budget Estimate for 1891-92. Total.	Revised Estimate for 1890-91.
			Rs.	Rs.	Rs.	Rs.	Rs.
		IRRIGATION—continued.					
		43. Minor Works and Navigation—continued.					
		PROVINCIAL—continued.					
2	2	Draughtsmen	30	60			
1	1	Muchi	12	12			
1	1	Head Messenger	10	10			
2	2	Messengers	7 and 6	13			
...	1	Waterman	1	1			
				792	9,504		
		Travelling Allowance and Contingencies ...	...	...	746		
					10,250		
		No. 1 INVESTIGATION PARTY—(MADURA).					
1	1	Executive Engineer	700	700			
1	1	Overseer	100	100			
1	1	Clerk	35	35			
1	1	Do.	25	25			
1	1	Do. or Draughtsman	20	20			
1	1	Draughtsman	50	50			
1	1	Do.	40	40			
4	4	Lascars	6	24			
		Total ...	...	994	11,928		
		Travelling Allowance and Contingencies ...	...	...	2,572		
		Total ...	...	...	14,500		
		No. 2 INVESTIGATION PARTY—(TINNEVELLY).					
1	1	Overseer	60	60			
1	1	Clerk	35	35			
2	1	Clerks	25	25			
1	1	Draughtsman	60	60			
1	1	Do.	40	40			
4	3	Lascars	6	18			
		Total ...	...	238	2,850		
		Travelling Allowance and Contingencies ...	...	...	794		
		Total ...	...	...	3,650		
		No. 4 INVESTIGATION PARTY—(SALEM).					
1	1	Executive Engineer	950	950			
1	1	Overseer	60	60			
1	1	Clerk	40	40			
1	1	Do.	25	25			
1	1	Do. and Assistant Draughtsman	20	20			

CHARGES.

PART IV—continued.

DETAIL OF THE BUDGET ESTIMATE OF ESTABLISHMENT CHARGES FOR THE YEAR 1891-92—cont.

Number.		Particulars.	Rate of salary.	Budget Estimate for 1891-92.			Revised Estimate for 1890-91.
1890-91.	1891-92.			Per mensem.	Per annum.	Total.	
			Rs.	Rs.	Rs.	Rs.	Rs.
		IRRIGATION—continued.					
		43. Minor Works and Navigation—continued.					
		PROVINCIAL—continued.					
		No. 4 INVESTIGATION PARTY—(SALEM)—continued.					
1	1	Draughtsman	40	50			
1	1	Do.	30	30			
4	4	Lascars	6	24			
...	1	Sweeper	2	2			
		Total ...	...	1,201	14,412		
		Travelling Allowance and Contingencies ...	...	...	2,338		
		Total ...	...	...	16,750		
		No. 5 INVESTIGATION PARTY—(SOUTH ARCOT).					
1	1	Overseer	60	60			
2	2	Clerks	25 & 20	45			
1	1	Draughtsman	50	50			
1	1	Do.	30	30			
3	3	Lascars	6	18			
		Total ...	...	203	2,436		
		Travelling Allowance and Contingencies ...	...	...	514		
		Total ...	...	...	2,950		
		No. 7 INVESTIGATION PARTY—(KISTNA).					
...	1	Executive Engineer, 4th Grade	600	600			
2	2	Overseers	60 & 100	160			
...	1	Clerk	30	30			
2	2	Clerks	20	40			
...	1	Draughtsman	40	40			
2	2	Draughtsmen	30	60			
2	6	Lascars	6	36			
		Total ...	...	966	11,592		
		Travelling Allowance and Contingencies ...	...	...	2,088		
		Total ...	...	...	13,680		

CHARGES.

PART IV—continued.

DETAIL OF THE BUDGET ESTIMATE OF ESTABLISHMENT CHARGES FOR THE YEAR 1891-92—cont.

Number. 1890-91.	Number. 1891-92.	Particulars.	Rate of salary.	Budget Estimate for 1891-92. Per mensem.	Budget Estimate for 1891-92. Per annum.	Budget Estimate for 1891-92. Total.	Revised Estimate for 1890-91.
			Rs.	Rs.	Rs.	Rs.	Rs.
		IRRIGATION—continued.					
		43. Minor Works and Navigation—continued.					
		PROVINCIAL—continued.					
		No. 8 IRRIGATION PARTY—(VIZAGAPATAM).					
1	1	Overseer	60	60			
1	1	Clerk	20	20			
1	1	Draughtsman	30	30			
1	1	Lascar	6	6			
		Total ...	...	116	1,392		
		Travelling Allowance and Contingencies ...	...	...	608		
		Total ...	...	...	2,000		
		Total, Special Establishment ...	...	...	...	63,780	57,500
		Total, Establishment Charges ...	...	...	...	8,00,102	7,98,836

PART VII.

ABSTRACT OF THE PROBABLE INCREASE OR DECREASE IN THE SUSPENSE ACCOUNTS OF IRRIGATION WORKS IN THE MADRAS PRESIDENCY FOR THE YEAR 1891-92—*Nil.*

All suspense accounts are included under Provincial, Civil Buildings and Roads Services.

APPENDIX A.

ACTUAL AND ESTIMATED CAPITAL ACCOUNT OF IRRIGATION MINOR WORKS AND NAVIGATION IN THE MADRAS PRESIDENCY TO END OF THE YEAR 1891-92.

	Direct Charges.	Indirect Charges.			Grand Total.
		Capitalization of Abatement of Land Revenue.	Leave and Pension Allowances.	Total.	
	Rs.	Rs.	Rs.	Rs.	Rs.
(1) *Pálár Anicut System.*					
Actual outlay to end of 1889-90 ...	17,91,006	16,725	77,901	94,626	18,85,632
Probable outlay during 1890-91 ...	47,821	625	1,239	1,864	49,685
Proposed outlay during 1891-92 ...	47,900	...	1,251	1,251	49,151
Total ...	18,86,727	17,350	80,391	97,741	19,84,468
(2) *Pelandorai Anicut System.*					
Actual outlay to end of 1889-90 ...	4,03,956	26,715	14,632	41,347	4,45,303
Probable outlay during 1890-91 ...	6,531	4,701	73	4,774	11,305
Proposed outlay during 1891-92 ...	...	...	...	...	...
Total ...	4,10,487	31,416	14,705	46,121	4,56,608
(3) *Tirukoilúr Anicut System.*					
Actual outlay to end of 1889-90 * ...	...	...	...	...	...
Probable outlay during 1890-91 ...	6,150	...	161	161	6,311
Proposed outlay during 1891-92 ...	12,300	...	322	322	12,622
Total ...	...	...	...	...	...
(4) *Chilka Lake Canal.*					
Actual outlay to end of 1889-90 ...	27,734	...	722	722	28,456
Probable outlay during 1890-91 ...	2,460	...	64	64	2,524
Proposed outlay during 1891-92 ...	...	...	...	...	...
Total ...	30,194	..	786	786	30,980
(5) *Buckingham Canal.*					
Actual outlay to end of 1889-90 ...	70,24,993	2,58,272	1,88,187	4,46,459	74,71,452
Probable outlay during 1890-91 ...	2,55,000	...	6,574	6,574	2,61,574
Proposed outlay during 1891-92 ...	2,49,000	...	6,440	6,440	2,55,440
Total ...	75,28,993	2,58,272	2,01,201	4,59,473	79,88,466
(6) *Vedarniem Canal.*					
Actual outlay to end of 1889-90 * ...	...	...	...	...	...
Probable outlay during 1890-91 ...	...	...	...	...	...
Proposed outlay during 1891-92 ...	12,300	...	322	322	12,622
Total ...	...	...	...	...	...

* Previous expenditure on Capital Account being traced in the office of the Examiner of Public Works Accounts.

APPENDIX B.

ACTUAL AND ESTIMATED REVENUE ACCOUNT OF IRRIGATION—MINOR WORKS AND NAVIGATION IN THE MADRAS PRESIDENCY TO END OF 1891-92.

—	Probable Receipts, 1891-92.			Probable Expenses during 1891-92 (Direct and Indirect).	Balance, Surplus or Deficit, 1891-92.	Probable Net Surplus or Deficit for 1890-91.	Actual Net Surplus or Deficit to end of 1889-90.	Probable Net Surplus or Deficit to end of 1891-92.
	Direct Receipts.	Irrigation Revenue and share of enhanced Land Revenue.	Total.					
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Cumbum tank system (*a*) ...	...	...	...	2,925	...	...	...	...
Thadapalli channel system (*a*)	...	...	...	5,028	...	...	...	...
Arkencota do. do. (*a*)	...	...	...	2,565	...	...	...	...
Kalingaroyen do. do. (*a*)	...	...	...	5,644	...	...	...	...
Chembrambakam tank do. ...	50	38,000	38,050	−1,217	39,267	33,164	4,57,442	5,29,873
Madras Water-supply and Irrigation Extension ...	12,200	23,000	35,200	1,781	33,419	29,132	−1,73,669	−1,11,148
Vallur anicut system (*a*) ...	...	...	...	636	...	...	...	...
Pálár do. do. ...	1,250	2,53,000	2,54,250	84,161	1,70,089	1,57,168	10,38,219	13,65,476
Poiney do. do. (*a*) ...	100	...	...	25,656	...	...	...	...
Cheyaur do. do. (*a*) ...	100	...	...	25,656	...	...	...	...
Pelandorai anicut system.	50	17,000	17,050	20,524	−3,474	2,767	−2,82,584	−2,83,291
Shatiatope do. do. (*a*)	760	...	...	22,585	...	...	...	...
Vriddháchalam anicut do. (*a*)	5	...	...	7,696	...	...	...	...
Mahamattur anicut do. (*a*)	5	...	...	5,028	...	...	...	...
Tirukoilúr do. do. (*a*)	550	...	...	20,530	...	...	...	...
Lower Coleroon anicut do. (*a*)	1,030	...	...	66,200	...	...	...	...
Maradur anicut system (*a*) ...	600	...	...	7,703	...	...	...	...
Chilka Lake canal ...	...	...	...	636	...	...	...	...
Dumagudiem do. (*a*) ...	300	...	...	15,396	...	...	...	...
Buckingham do. ...	81,000	...	81,000	1,18,881	−37,800	−50,979	19,027	−69,752
Vedarniem do. ...	800	...	800	6,371	−5,571	−5,602	−23,872	−35,045
Total ...	98,800	...	...	4,44,385	...	...	...	...

(*a*) For these works for which Capital and Revenue Accounts have recently been ordered to be kept, the revenue due to old irrigation under them has not yet been determined. Until this is done the probable increase of revenue due to improvements carried out by the British Government cannot be entered.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following papers :—

From Major D. McNEIL CAMPBELL, R.E., Superintending Engineer, Periyár Project, to the Chief Engineer, Public Works Department, dated 1st December 1890, No. 2136 P.R.

Adverting to circular memorandum No. 28 G., dated 17th ultimo, from the Chief Engineer for Irrigation, I have the honor to forward herewith an application for modification of allotments for works in this project for the current official year 1890-91.

ENCLOSURE.

PERIYAR PROJECT.

STATEMENT showing the modification of allotments, Irrigation, for 1890-91.

Division.	Main head.	Sub-head.	No. of item.	Name of work.	Amount of estimate.	Existing grant for 1890-91.	Modification of allotment applied for: Reduction.	Modification of allotment applied for: Increase.	Proposed grant.
				49. IRRIGATION.	RS.	RS.	RS.	RS.	RS.
				Capital expenditure on Public Works (not charged against Revenue).					
No. I Periyár.	(1) Head Works.	C. Works ..	1	Main dam	6,91,000	1,50,000	..	45,948	1,95,948
			2	Right bank, escape	1,37,000	20,000	..	14,000	34,000
			3	Water-shed cutting	1,20,000	16,000	..	..	16,000
			4	Do. tunnel	2,61,000	53,000	..	..	53,000
		K. Buildings.	5	Buildings at Periyár and Thekady	1,78,740	10,600	..	17,810	28,410
		O. Miscellaneous.	6	Roads, locks, dams, &c. ..	87,000	10,000	..	18,000	28,000
		P. Maintenance.	7	Maintenance during construction	50,000	3,000	..	990	3,990
				Tools and plant	..	20,000	..	31,000	51,000
				Total, (1) Head Works ..	..	2,82,600	..	1,27,748	4,10,348
				Establishment charge at 23 per cent. on Rs. 3,59,348 for works	..	60,400	..	22,252	82,652
				Grand Total ..	..	3,43,000	..	1,50,000	4,93,000
No. II Periyár.	(2) Main Canals and Branches.			NORTH MAIN CHANNEL.					
				1st Reach.					
		B. Land ..	1	Compensation for land ..	34,545	..	..	300	300
		D. Regulators.	2	Head sluice to Perumai anicut ..	30,150	8,000	..	..	8,000
			3	Scouring sluice to do. ..	13,400	6,555	..	3,445	10,000
			4	Head sluice to Vadmurai channel.	6,430	4,930	930	..	4,000
		E. Falls and Weirs.	5	Fall and bridge at 2½ miles in lieu of plan No. 45	6,850	1,289	..	11	1,300
		F. Cross Drainage Works.	6	Culvert at ½ mile in lieu of plan No. 52 in 1st mile	7,265	1,742	..	2,058	3,800
			7	Culvert at 2⅔ miles in lieu of plan No. 52	5,120	500	..	1,700	2,200
			8	Culvert at 3 miles 1 furlong 470 feet in lieu of culvert, plan No. 52	4,140	2,900	1,400	..	1,500

Statement showing the modification of allotments, Irrigation, for 1890-91—*cont.*

Division.	Main head.	Sub-head.	No. of item.	Name of work.	Amount of estimate.	Existing grant for 1890-91.	Modification of allotment applied for: Reduction.	Modification of allotment applied for: Increase.	Proposed grant.
					RS.	RS.	RS.	RS.	RS.
No. II Periyár—*cont.*	(2) Main Canals and Branches—*cont.*			NORTH MAIN CHANNEL—*cont.*					
				1st Reach—cont.					
		E. Cross Drainage Works—*cont.*	9	Aqueduct at 2 miles 7 furlongs and 234 feet, plan No. 53 ..	4,720	3,706	6	..	3,700
			10	Aqueduct at 3 miles 3 furlongs and 500 feet, plan No. 53 ..	4,140	2,082	..	918	3,000
			11	Surplus sluice of 12 vents for Ramarajapuram tank at 3 miles 7 furlongs, plan No. 54 ..	32,400	8,000	..	..	8,000
			12	Culvert at Ramarajapuram tank .	6,500	2,200	..	3,300	5,500
			13	Culvert at 5½ miles in lieu of plan No. 52	3,500	481	331	..	150
		G. Bridges ..	14	Bridge for South Indian Railway	14,761	7,000	..	3,000	10,000
			15	Bridge in the 7th mile, plan No. 69	5,167	286	..	14	300
			16	Accommodation bridge at 4th mile to replace the bridge built by ryots	3,340	2,128	1,128	..	1,000
			17	Bridge at 1 mile, 4 furlongs and 8·03 chains	3,500	3,500	1,000	..	2,500
		K. Buildings.	18	Rebuilding two small rooms to the store-shed at Perumai ..	100	..	..	100	100
			19	Demolishing rest-house at Natchikulam	98	..	..	98	98
			20	Repairs to Natchikulam shed ..	233	..	..	233	233
		L. Earthwork.	21	Excavation, main channel, 1st reach	1,40,655	49,040	14,040	..	35,000
		O. Miscellaneous.	22	Sluice to irrigate 50 acres at 5 furlongs and 10 chains ..	430	430	..	..	430
			23	Irrigation sluice at 2 miles and 3 furlongs	800	800	..	..	800
				2nd Reach.					
		F. Cross Drainage Works.	24	Culvert at 8th mile in lieu of plan No. 52	4,300	790	..	210	1,000
			25	Aqueduct of 3 vents at 10th mile in lieu of inlet and outlet, plans Nos. 57 and 58	11,900	4,500	..	..	4,500
			26	Aqueduct of 2 vents at 10th mile in lieu of inlet and outlet, plans Nos. 59 and 60	18,000	8,000	3,000	..	5,000
			27	Cross drainage work No. 4 at 10th mile in lieu of inlet and outlet, plans Nos. 61 and 62 ..	4,080	2,867	..	..	2,867
		L. Earthwork.	28	Excavation, main channel, 2nd Reach	49,200	4,000	..	..	4,000
				3rd Reach.					
		B. Land ..	29	Compensation for land ..	16,745	..	..	4,000	4,000
		O. Regulators.	30	No. I, irrigation sluice ..	1,150	1,140	..	..	1,140
			31	,, II, do. ..	1,150	1,050	..	..	1,050
			32	,, III, do. ..	1,150	220	..	1	221
		F. Cross Drainage Works.	33	Aqueduct of 2 vents at 11th mile in lieu of inlet and outlet, plans Nos. 63 and 64	23,500	8,500	..	7,416	15,916
			34	Super-passage in lieu of inlet and outlet, plans Nos. 57 and 58 in 12th mile	14,100	6,000	..	2,002	8,002
			35	Super-passage in the 13th mile in lieu of inlet and outlet, plans Nos. 57 and 58	12,800	6,000	813	..	5,187
			36	Super-passage in the 14th mile in lieu of inlet and outlet, plans Nos. 57 and 58	13,500	6,000	..	3,098	9,098
			37	Aqueduct in the 15th mile in lieu of inlet and outlet, plans Nos. 57 and 58	10,200	6,000	16	..	5,984
			38	Fourth super-passage or 6th cross drainage work at 15th mile 4th furlong, and 8·93 chains in lieu of plans Nos. 57 and 58	13,500	6,000	..	2,000	8,000

Statement showing the modification of allotments, Irrigation, for 1890-91—*cont.*

Division.	Main head.	Sub-head.	No. of item.	Name of work.	Amount of estimate.	Existing grant for 1890-91.	Modification of allotment applied for: Reduction.	Modification of allotment applied for: Increase.	Proposed grant.
No. II Periyár Division—*cont.*	(2) Main Canals and Branches—*cont.*			NORTH MAIN CHANNEL—*cont.*	RS.	RS.	RS.	RS.	RS.
				3rd Reach—cont.					
		F. Cross Drainage Works—*cont.*	39	Fifth super-passage or 7th cross drainage work at 15 miles 7 furlongs and 6·21 chains in lieu of plans Nos. 57 and 58 ..	13,500	6,000	..	2,000	8,000
		G. Bridges ..	40	Bridge, plan No. 69	5,700	975	..	..	975
			41	First accommodation bridge, plan No. 70	3,500	1,000	..	2,500	3,500
			42	Second accommodation, bridge plan No. 70	3,500	1,000	..	55	1,055
			43	Third accommodation bridge, plan No. 70	3,500	1,000	..	988	1,988
		K. Buildings.	44	Rest-house at Andiputty ..	250	..	..	250	250
		L. Earthwork.	45	Excavation, 3rd reach ..	71,665	16,000	..	2,000	18,000
				4th Reach.					
		A. Preliminary.	46	Surveying and lock-spitting 4th and 5th reaches	1,050	210	..	..	210
		B. Land ..	47	Compensation for land ..	8,455	..	..	8,455	8,455
		D. Regulators.	48	No. I Irrigation sluice ..	1,150	1,140	140	..	1,000
			49	Proposed weir for Kuruvankulam tank	520	..	..	520	520
		F. Cross Drainage Works.	50	Culvert at 17 miles and 3 furlongs in lieu of inlet and outlet, plans Nos. 57 and 58 ..	5,400	2,000	..	3,400	5,400
		L. Earthwork.	51	Excavation, main channel, 4th reach	25,000	3,000	..	5,532	8,532
				5th Reach.					
		B. Land	52	Compensation for land ..	10,975	6,557	..	4,418	10,975
		F. Cross Drainage Works.	53	Super-passage for Shattryar crossing in lieu of plan No. 65 ..	17,000	7,000	..	2,000	9,000
			54	Super-passage for Marangahur crossing in lieu of plan No. 66.	21,500	6,000	..	3,000	9,000
			55	Inverted syphon, plan No. 72 ..	6,690	4,000	4,000	..	..
		G. Bridges ..	56	Bridge at 18 mile 5 furlongs and 17·5 chains, plan No. 71 ..	3,640	3,600	..	..	3,600
			57	Bridge, plan No. 72	4,010	3,377	1,377	..	2,000
		K. Buildings.	58	Rest-house at Mettuputty ..	4,160	4,160	..	..	4,160
		L. Earthwork.	59	Excavation, 5th reach ..	29,035	9,000	..	3,000	12,000
				6th Reach.					
		A. Preliminary.	60	Surveying and lock spitting, 6th, 7th and 8th reaches ..	2,420	..	..	1,500	1,500
		B. Land ..	61	Compensation for land ..	12,205	10,000	..	2,205	12,205
		L. Earthwork.	62	Excavation	35,375	10,000	8,000	..	2,000
				7th Reach.					
		B. Land ..	63	Compensation for land ..	5,315	5,315	..	..	5,315
		L. Earthwork.	64	Excavation	22,405	5,172	5,172	..	..
				8th Reach.					
		B. Land ..	65	Compensation for land ..	7,475	7,000	..	..	7,000
		L. Earthwork.	66	Excavation	9,475	5,000	5,000	..	..
				Total ..	..	2,85,142	46,353	75,727	314,516
	(3) Distributaries.			*1st Branch Channel.*					
		A. Preliminary	67	Preliminary expenses	2,335	1,000	..	..	1,000
		D. Regulators.	68	Head sluice in lieu of plan No. 37	1,150	481	..	..	481
		E. Falls and Weirs.	69	No. I fall and sluice combined, plan No. 37	1,144	..	Completed.		
			70	No. II fall and sluice combined, plan No. 37	1,144	..	Completed.		
			71	No. III fall and sluice combined, plan No. 37	1,144	..	Completed.		
			72	No. IV fall and sluice combined, plan No. 37	1,144	572	..	..	572
			73	No. V fall and sluice combined, plan No. 37	1,144	438	..	..	438
			74	No. VI fall and sluice combined, plan No. 37	1,144	714	..	..	714
			75	No. VII fall and sluice combined, plan No. 37	1,144	1,035	..	..	1,035
		L. Earthwork.	76	Excavation, 1st branch channel.	13,530	4,310	310	..	4,000

Statement showing the modification of allotments, Irrigation, for 1890-91—*cont.*

Division.	Main head.	Sub-head.	No. of item.	Name of work.	Amount of estimate.	Existing grant for 1890-91.	Modification of allotment applied for: Reduction.	Modification of allotment applied for: Increase.	Proposed grant.
No. II Periyár Division—*cont.*	(3) Distributaries—*cont.*			NORTH MAIN CHANNEL—*cont.*	RS.	RS.	RS.	RS.	RS.
				2nd Branch Channel.					
		B. Land ..	77	Compensation for land ..	810	..	..	810	810
		D. Regulators.	78	Head sluice to 2nd branch channel, plan No. 37	1,150	193	..	..	193
		E. Falls and Weirs.	79	First fall, plan No. 51 ..	670	280	..	231	511
			80	Two falls, plan No. 51 ..	1,280	280	..	202	482
		F. Cross Drainage Works.	81	Culvert across 2nd branch channel, plan No. 68	730	335	..	395	730
		G. Bridges ..	82	Road tunnel in 2nd branch channel	400	..	..	400	400
		L. Earthwork	83	Excavation	5,500	2,655	542	..	2,113
		O. Miscellaneous.	84	Three irrigation sluices, plan No. 42	960	360	360	..	..
				3rd Branch Channel.					
		B. Land ..	85	Compensation for land ..	3,150	..	..	1,000	1,000
		D. Regulators.	86	Head sluice for 3rd branch channel	1,150	1,021	..	..	1,021
			87	Head-sluice from 3rd branch channel for subsidiary branch channel, plan No. 37 ..	1,150	1,150	1,150	..	..
			88	Regulator, plan No. 39 ..	480	480	..	..	480
		E. Falls and Weirs.	89	Three falls, plan No. 51 ..	2,310	2,310	10	..	2,300
			90	Two do. do. ..	1,520	1,520	1,020	..	500
			91	Two do. do. ..	1,440	1,440	940	..	500
			92	Two do. do. ..	1,420	1,420	1,420	..	..
			93	Three do. do. ..	2,010	2,010	10	..	2,000
		F. Cross Drainage Works.	94	Culvert, plan No. 68	2,740	2,740	2,740	..	..
		L. Earthwork.	95	Excavation, 3rd branch channel.	9,240	7,826	..	..	7,826
				4th Branch Channel.					
		B. Land ..	96	Compensation for land ..	8,100	8,100	2,100	..	6,000
		D. Regulators.	97	Head sluice for the 4th branch channel, plan No. 36 ..	1,840	1,840	..	..	1,840
			98	Head sluice from 4th branch channel for subsidiary branch channel, plan No. 37 ..	1,150	1,150	650	..	500
			99	Five regulators, plan No. 39 ..	2,400	2,400	1,900	..	500
		G. Bridges ..	100	Three road tunnels, plan No. 41.	2,370	2,370	1,870	..	500
			101	Road tunnel and fall combined at 3,150 feet from the head sluice in lieu of plans Nos. 79 and 80	2,000	..	..	1,000	1,000
			102	No. II fall and bridge combined.	1,720	..	..	1,000	1,000
		L. Earthwork.	103	Excavation, 4th branch channel.	37,750	25,000	15,000	..	10,000
				Total ..	..	75,430	30,022	5,038	50,446
				Grand Total ..	..	3,60,572	76,375	80,765	3,64,962
				Establishment at 23 per cent. on Rs. 19,088 transferred from Works to B. Land	..	74,428	4,390	..	70,038
				Tools and plant	..	4,000	..	..	4,000
				Total, No. II Division ..	..	4,39,000	80,765	80,765	4,39,000
				Grand Total ..	..	7,82,000	80,765	2,30,765	9,32,000

(Signed) J. PENNYCUICK, Colonel, R.E.,
Secretary to Government, P.W.D.

From H. S. TAYLOR, Esq., Superintendent of Works, No. I Periyár Division, to the Chief Engineer, Public Works Department, dated 9th December 1890, No. 363 S.E.

With reference to G.O., No. 698 I., dated 1st instant, I have the honor to inform you that a statement showing the distribution of the revised grant, viz.,

Rs. 4,92,998, has already been forwarded to the late Superintending Engineer, Periyár Project, and that a copy of the same is herewith submitted for approval and sanction.

2. The Superintending Engineer, it is understood, has, with his letter, dated 1st December 1890, No. 2136 P.R., forwarded to Government a statement in which a sum of Rs. $1\frac{1}{2}$ lakhs is applied for to this division, besides the sum of Rs. 50,000 already transferred from No. II Periyár division.

3. I should prefer to wait another month before asking for the additional grant, viz., Rs. 50,000, applied for by the Superintending Engineer to be sanctioned in view of the very possible stoppage of tunnelling work by failure of water.

Submitted to Government.

2. The statement received from the Superintending Engineer has been modified with reference to the subsequent letter from the Superintendent of Works.

(Signed) J. PENNYCUICK, Colonel, R.E.,
Chief Engineer, P.W.D.

ORDER—dated 23rd December 1890, No. 777 I., Public Works.

The distribution of the existing grant of Rs. 9,32,000 for the Periyár Project, including the additional grant of $1\frac{1}{2}$ lakhs lately sanctioned by the Government of India as shown in the accompanying statement, is approved.

(True Extract.)

(Signed) J. PENNYCUICK, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintendent of Works, No. I Periyár Division.
" Superintending Engineer, VI Circle.
" Examiner, Public Works Accounts.
" Chief Engineer for Irrigation.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 23rd.

Recd. *Encl.*

G.O., 23rd Dec. 1890, No. 777 I.

DECEMBER.

Periyar Project

The proposed distribution of the existing grant of Rs. 9,32,000, including the additional grant of $1\frac{1}{2}$ lakhs for the —, approved.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper:—

From Colonel H. SMALLEY, R.E., Superintending Engineer, III Circle, to the Chief Engineer for Irrigation, dated Bellary, 8th December 1890, No. 2657.

I have the honor to forward plans and estimates, amounting to Rs. 3,700, for constructing head-sluices to the Thoortha and Ramsagar channels called for in G.O., No. 496 I., dated 27th November 1889. Collector's signature has not been obtained yet on account of the delay it would occasion and it is wanted to begin work forthwith. It is suggested that if other funds are not available the Irrigation cess grant Rs. 13,000 be made available for these works in the first instance and recovered hereafter on distinctly cess work.

ENCLOSURE.

REPORT to accompany the estimate for construction of Head-sluice to the Thoortha and Ramsagar Channels.

These take off from the 4th and 5th anicuts respectively on the Tungabhadra. The accompanying estimate and plan for head-sluices is sent in for early sanction, as it is not considered advisable to delay them until estimates for the general improvement of the channels could be prepared.

2. In fact head-sluices are urgently required, for the heads being now open floods in the river are free to enter; the excess of water is supposed to be got rid of by the numerous dilapidated escapes, most of them dependent on the removal of needles, mud or straw, the usual result being, as recently happened, during the floods in the early part of November; that the escapes were not fully opened when most required, and this condition was still further contributed to by a recent provision of *horizontal* baulk shutters to some of the escapes.

3. The result of the combination was that both the Thoortha and Ramsagar channels were badly breached. In the case of the latter the flush escape and surplus sluices at 1½ miles being destroyed.

4. It is believed that, on the provision of a head-sluice, this need not be replaced, and that on both channels most of the old escapes can be done away with, as, when river floods can be excluded, the channels can carry the small amount of local drainage that comes into them.

5. *Area of cultivation.*—According to the Imperial list the areas to be supplied are Thoortha channel 2,288, Ramsagar channel 1,549, but when detailed accounts are made out, sluice by sluice (as has just been done for the Roya channel), most probably the areas will approximate to Thoortha 3,000 acres, Ramsagar 2,000 acres; under the latter are some very fine stretches of rich cultivation.

6. *Design of sluices.*—It will be noticed that the same design and size of sluice is proposed for both channels, and this needs explanation. In fixing the vent area, the principle kept in view has been to allow sufficient waterway when the river is low, so that the loss of head at the sluices shall be a minimum. Under ordinary conditions the low velocity of 2 feet per second through the sluices will pass a sufficient supply.

7. The Ramsagar sluice waterway is, *relatively* proposed, so much greater, for the reason that the available fall along the channel for several miles is small and the velocity consequently low, so any change in the *regime* is deprecated.

8. In the Thoortha channel, on the contrary, the four miles below mile No. 1 are a perfect millrace, the water passing over a succession of natural rocky falls.

Up to mile No. 1 the fall is slight and the flow sluggish, but this can be remedied by lowering the rocky barrier at 1 mile 6 furlongs (*vide* longitudinal section); without this improvement the vent area would scarcely be sufficient in low stages of the river (*vide* cross sections of the channel).

9. *Sites for sluices (Thoortha).*—These have been carefully considered; one unavoidable condition is that, owing to a limited period (two months) of closure, the sluices must be built *off* the present lines of channels.

10. In the case of the Thoortha, the site that first suggested itself was at A on plan, where the mass of rock might form the left abutment and wing, but the depth of channel here is considerable, and there is no convenient means of cutting a diversion while the sluice was under construction. So the site shown on the survey between the 3rd and 4th furlongs was decided on where a bank runs to the rocky hills, close to either flank, will completely exclude the river.

11. The possibility, of a sluice so placed at some distance down the channel forming when closed a silt trap, suggested itself, but the longitudinal section of the channel shows that, so far at all events, the reverse has been the case, which the *flush* escape (with one vent) at the 5th furlong could scarcely account for.

The same condition prevails at the heads of two other channels (Basavanna and Roya) where the beds between the sluices and the river are considerably deeper than the sluice sills, though these portions of the channels are not provided with scour vents.

12. *Ramsagar sluice.*—The site proposed is just where the channel leaves the river, and in this case it would not at all answer to locate the sluice lower down, for even without a sluice or other barrier heavy sand clearances are periodically necessary in the first few furlongs of the channel.

13. *Foundations (Thoortha).*—There has not been time to make borings.

At the Thoortha site it is believed rock will be found within the depth of concrete allowed (should it exist a foot or so *below* that level, extra depth of concrete will be advisable).

14. *Foundations, Ramsagar.*—The Ramsagar site is probably sand over rock and possibly some revised arrangement of foundations may be found necessary when the excavation is made. But as designed the value of the amount of concrete allowed for will probably suffice.

15. *Maximum H.F.L. in the river.*—This has been taken the same, *i.e.*, 5 feet over the anicut in each case, and, judging by appearances and facilities for spill, should be safe, but reliable definite information is not procurable and the level assumed has been deduced from marks pointed out by the villagers and other considerations.

16. Early sanction to the general design and arrangements proposed is requested, to enable materials to be collected and the shutters and gear made up, thus utilizing some of the available grant under Cess * funds, which otherwise will, it is feared, lapse.

* Rs. 13,000.

(Signed) J. C. LARMINIE,
Executive Engineer.

1st December 1890.

ORDER—dated 30th December 1890, No. 778 I., Public Works.

The following estimates are sanctioned:—

Irrigation.
43. Minor Works and Navigation.
Irrigation and Navigation.
Works for which neither Capital nor Revenue Accounts are kept.
Bellary Division.
Original Works.

		RS.
1.	Constructing head-sluice to Thoortha channel	3,700
2.	Constructing head-sluice to Ramsagar channel	3,700
	Total ...	7,400

2. This sanction has been registered as No. 115 I. of 1890-91.

3. A sum of Rs. 3,700 is appropriated for expenditure on the works now sanctioned, Rs. 1,700 from the reserve under Original Works, and Rs. 2,000 under Repairs, under "Irrigation and Navigation Works for which neither Capital nor Revenue Accounts are kept." The balance of the amount required will be allotted next month.

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, III Circle, with seven enclosures.
" Examiner, Public Works Accounts.
" Revenue Department.
" Editors' Table.

IRRIGATION.
ACCOUNT.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 30th.

Recd. *Encl.*

G.O., 30th Dec. 1890, No. 778 I.

DECEMBER.

Head-sluices

Estimates of Rs. 3,700 each for constructing — to the Thoortha and Ramsagar channels in the Bellary division, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following paper:—

From G. D. WYBROW, Esq., Superintending Engineer, I Circle, to the Chief Engineer for Irrigation, dated Dowlaishweram, 12th December 1890, No 1785 G.D.

I have the honor to submit, for your approval and sanction of Government, a statement showing the intended closure of canals in 1891 in the Godávari district.

2. The dates of closure and re-opening have been fixed, after consultation with the Collector and the European and Native Chambers of Commerce.

ORDER—dated 30th December 1890, No. 779 I., Public Works.

The closure of canals in the Godávari district for 1891, as shown in the subjoined statement, is approved, and the requisite notification will be published in the Fort St. George and the Godávari and Kistna Gazettes:—

Closure of Canals.

The canals of the Godávari district will be closed for the period shown below in 1891.

Canals.	Dates of		Remarks.
	Closure.	Re-opening.	
Eastern Delta.			
Main canal	15th April.	15th May.	Hour of closing 6 A.M. Do. re-opening 6 P.M.
Bank canal			
Cocanada canal			
Mundapetta canal			
Coringa canal			
Injeram canal			
Sámalkót canal	1st April.	20th May.	Canals do not become thoroughly navigable for some 48 hours after re-opening.
Central Delta.			
All canals	1st April.	15th May.	
Western Delta.			
All canals	1st April.	15th May.	
Upper Godávari.			
Dumagudiem canal	15th March.	15th June.	

(True Extract.)

(Signed) G. T. WALCH,
Joint Secy. to Govt., P.W.D.,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" " " II "
" Revenue Department.

IRRIGATION.

Govt. of {1890} Madras.

PUBLIC WORKS.

Dated December, 30th.

Recd. *Encl.*

G.O., 30th Dec. 1890, No. 779 I.

DECEMBER.

Closure of Canals

The proposed — in the Godávari district for 1891, approved.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

TABULAR STATEMENT OF MISCELLANEOUS PROCEEDINGS AND MATTERS OF ROUTINE.

IRRIGATION,

FOR THE MONTH OF DECEMBER 1890.

Subjects.	Number and Date of Order.	Numbers and Dates of previous Orders.
Water-tax establishment.—Proceedings in the Revenue Department communicating the orders of the Financial Department sanctioning the proposition statement for the — required in the Zemindari Delta tracts of the Kistna district, recorded.	2nd Dec. 1890, No. 701 I.	18th Nov. 1890, No. 668 I.
Statement of objectionable items.—Orders on —, I Circle, for period ending 31st August 1890.	2nd do. do. No. 702 I.	16th Sept. 1890, No. 522 I. 4th Sept. 1890, No. 482 I. 11th Aug. 1890, No. 428 I. 17th Nov. 1890, No. 664 I. 29th Aug. 1890, No. 466 I.
Statement of objectionable items.—Orders on —, Periyár project, for period ending 31st August 1890.	2nd do. do. No. 703 I.	4th Sept. 1890, No. 486 I. 17th Feb. 1890, No. 100 I. 23rd May 1890, No. 303 I.
Statement of objectionable items.—Orders on —, V Circle, for period ending 31st August 1890.	2nd do. do. No. 704 I.	4th Sept. 1890, No. 488 I. 28th May 1890, No. 306 I. 25th Feb. 1890, No. 117 I. 18th Dec. 1889, No. 635 I. 5th Dec. 1889, No. 607 I.
Ryves' canal, Kistna district.—Proceedings in the Financial Department deciding that the initial and recurring outlay on certain works connected with — be borne by Provincial funds, communicated to the Superintending Engineer, II Circle, with remarks.	3rd do. do. No. 708 I.	24th March 1890, No. 193 I.

Subjects.	Number and Date of Order.	Numbers and Dates of previous Orders.
Tanks.—Ordered that the Resident in Mysore be addressed in the Political Department with regard to the information asked for by the Chief Engineer, Mysore Public Works Department, on certain — situated in the Madras territory, the sources of supply to which rise in the Paragada taluk of the Mysore Province.	3rd Dec. 1890, No. 709 I.	......
Statement of objectionable items.—Orders on Provincial —, II Circle, for period ending 31st August 1890.	4th do. do. No. 711 I.	17th Oct. 1890, No. 592 I. 24th Sept. 1890, No. 540 I. 21st Aug 1890, No. 453 I. 24th June 1890, No. 347 I.
Surrenders.—The surrender of Rs. 3,000 by the Superintending Engineer, V Circle, from the allotment for Uttramallur head-sluice credited to the reserve under 43. Minor Works and Navigation Works for which neither Capital nor Revenue Accounts are kept—"Original works."	4th do do. No. 715 I.	......
Transfer of Rs. 5,000 from No. II to No. I Periyár division.—Office notes to and from the Examiner regarding the —, recorded with reference to G.O., No. 685 I., dated 25th November 1890.	5th do. do. No. 717 I.	......
Periyár Project.—Progress Report of works in the — for October 1890, ordered to be forwarded to the Government of India.	6th do. do. No. 722 I.	20th Nov. 1890, No. 4762 C. 19th Nov. 1890, No 4748 C. 24th Oct. 1890, No. 607-8 I. 23rd Oct. 1890, No. 601-2 I.
Forwarded	6th do. do. No. 723 I.	......
Views of the Periyár works.—Ordering the distribution of —.	6th do. do. No 724 I.	......
Views of the Periyár works.—A set of the —, forwarded to the Under Secretary of State for India.	6th do. do. No. 725 I.	......
Views of the Periyár works.—A set of the —, forwarded to the Government of India.	6th do. do. No. 726 I.	......
Errata.—Proceedings of the Board of Revenue forwarding — in its Proceedings No. 337, dated 3rd November 1890, recorded.	9th do. do. No. 735 I.	......
Tank Restoration work.—Proceedings, Financial Department, communicating, with remarks, letter from the Government of India approving the programme of the — in the Madras Presidency for 1890-91, communicated to the Chief Engineer for Irrigation, with remarks.	10th do. do No. 739 I.	......
Támbraparni river flood banks at Mukkani.—The petitioners of Mukkani, protesting against the alignment of the —, informed that the alignment has been very carefully considered and will not be altered.	10th do. do. No. 741 I.	......

Subjects.	Number and Date of Order.	Numbers and Dates of previous Orders.
Contractor Chinnasawmy, South Arcot district.—The criminal prosecution of — for collecting and receiving money to be paid as illegal remuneration to public servants, sanctioned.	11th Dec. 1890. No. 742 I.	.. ...
Correspondence.—Ordered that the papers containing the discussion at the conference held on the 10th May 1890 to consider pending irrigation disputes between the Madras Presidency and the Mysore State, be forwarded to the Resident in Mysore.	12th do do. No. 743 I.	......
Nicoll's Agricultural Engineering in India.—Circulating to Superintending Engineers the pamphlet.	12th do. do. No. 745 I.	......
Erratum in Proceedings of Madras Government, No. 640 I., dated 7th November 1890.	12th do. do. No. 746 I.	......
Irrigation Cess Fund.—Orders of the Revenue Department on the revised and budget estimates of receipts and charges of the — for 1890-91 and 1891-92, communicated to the Superintending Engineers, III and IV Circles, for information and guidance.	13th do. do. No. 747 I.	......
Statement of objectionable items.—Orders on Provincial —, III Circle, for period ending 30th September 1890.	15th do. do. No. 755 I.	......
Bridge over Ryves' canal near Bezváda.—Proceedings, Revenue Department, sanctioning an additional allotment of Rs. 5,610 for the construction of the — from the Canal and Ferry funds, communicated to the Superintending Engineer, II Circle.	16th do. do. No. 758 I.	......
Railway guides—Proceedings, Financial Department, communicating Government order stating that — may be purchased by officers without the intervention of Government, recorded.	17th do. do. No 761 I.	9th April 1890, No. 1068 W.
Statement of objectionable items.—Orders on —, I Circle, for period ending 30th September 1890.	19th do. do. No. 766 I.	9th Oct. 1890, No. 566 I.
Statement of objectionable items—Orders on —, VI Circle, for period ending 30th September 1890.	19th do. do. No. 770 I.	......
Statement of objectionable items.—Orders on —, II Circle, for period ending 30th September 1890.	19th do. do. No. 772 I.	10th Oct. 1890, No. 575 I. 7th Nov. 1890, No. 640 I.
Voluntary irrigation cess system.— Proceedings, Revenue Department, sanctioning the extension of the — to the Nanjam channel in the Trichinopoly and Kulitalai taluks, communicated to the Superintending Engineer, VI Circle.	20th do. do. No. 773 I.	... ..
Alignment of the left bank of the Tambraparni in Tenkarai taluk.—Informing the petitioners of Tenkarai taluk that the — has been carefully considered and cannot be altered.	20th do. do. No. 774 I.	......